

Chemical Week

October 6, 1951

Price 35 cents



There are more five-figure jobs than men to fill them; here's what's happening and why p. 11

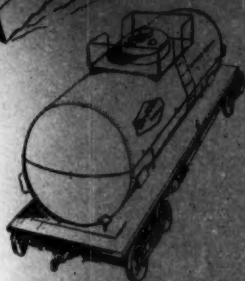
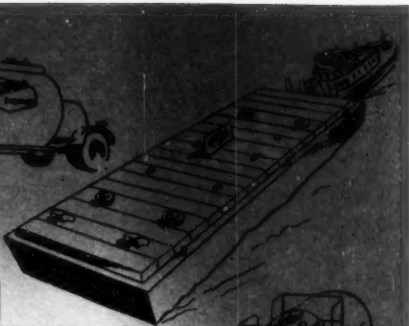
◀ **Aerosol packer Barr wins HST's praise; his employees' "disabilities" are assets** p. 14

◀ **CW Camera sees caution, control, cooperation as triple key to new drugs** p. 22

Titanium's had the spotlight but watch zirconium; it's moving up p. 27

Container revolution: No steel, no tin in newest "tin cans" p. 32





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Chemical Week

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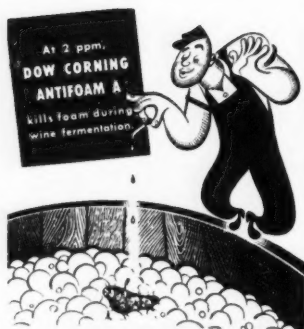
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OPINION . . .

Silicone in Aerosol

TO THE EDITOR: As buyer of Maid-of-Honor Silicone Furniture Cream, I was delighted to read the very interesting write-up on this product in your issue of August 11th. . . .

The manufacturers, Plaze, Inc. of St. Louis, and I feel that this is a new approach to the furniture polish business . . . is one that will offer a customer not only a quality finish to her furniture, but also an extremely easy method of dispensing the material. . . .

May I add that we in Sears Paint Buying Department are constant readers of your fine publication. . . .

T. F. ERICKSON
Paint Department
Sears, Roebuck and Co.
Chicago, Ill.

Coast Carbide

TO THE EDITOR: I was very much interested in reading the story on carbide in your September first issue. ("Carbide: A Third More") . . .

Unfortunately you did not mention the fact that the Electro Metallurgical Company, a Division of Union Carbide and Carbon Corporation, is doubling the carbide capacity of its Portland, Oregon plant . . . that Pacific Carbide & Alloys Company here has also increased its capacity. As these two plants represent the only producers of calcium carbide on the Pacific Coast, we are quite "jealous" of our position in this industry.

I realize that in any over-all article it is hard to mention all parts of an expansion program but I thought I would bring this to your attention.

CHESTER K. STERRETT,
Manager, Industries Department
Portland Chamber of Commerce
Portland, Oregon

Tariff Tangle

TO THE EDITOR: I would like to make a few comments about the lead article in your August 25th issue, entitled: "Again the Tariff Tangle."

The opening sentence said that "the chemical importers watched and waited." Certainly the domestic producers of organic chemicals and dyes also watched and waited, and I am sure, with much more anxiety than the importers!

The chief objections voiced by the industry members who testified before the Ways and Means Committee of the House were against paragraphs 13 and 14, which eliminate the "American Selling Price" as a basis for assessing duties. The reasons for

these objections are very real to all manufacturers of organic chemicals and dyes, particularly those covered by Articles 27 and 28 in the Tariff Act of 1930.

American Selling Price as a basis for duty assessment was originally adopted by Congress in the Tariff Act of 1922 after literally spending years in seeking a fair basis that could be clearly understood by importers and manufacturers alike, and which would overcome the previous defects which had absolutely stifled the growth of an organic chemical industry in the United States ever since the first synthetic dyestuff was discovered in 1856.

Unlike American producers, foreign manufacturers do not have any published prices for the vast majority of their products. They are sold very generally on a basis of "all that the traffic will bear." As was brought out in testimony before the Ways and Means Committee, it was standard practice to manipulate prices in whatever way was necessary to insure their importation into this country.

The creation of the American Selling Price valuation for the thousands upon thousands of organic chemicals, intermediates, dyes, etc., eliminated most of the hokum and mystery that surrounded the industry . . . stimulated at long last the development of a fully-rounded organic chemical industry in this country without which we would have been absolutely helpless in World War II . . . without which I would shudder to think what our chances might be in a third holocaust.

The intention of the Bill, H.R. 1535, is to "simplify customs procedure." The actual facts are that if American Selling Price is eliminated, the appraisal of imports of these thousands of products would be necessary to determine the "reasonably equivalent duties" as called for in the Bill.

The U.S. Tariff Commission would undoubtedly require at least two years' work on the part of a corps of experts to determine the changes required under Section 14 of this Bill, and the Customs Bureau has admitted that the whole procedure is a very complicated one.

The sole reason for advocating any change in the basis of evaluation of imports, as stated by the Treasury Department last year when this Bill was first introduced, was to make our customs procedures conform with the principles outlined in the Havana Charter of the proposed International Trade Organization (ITO). Since



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Barrett is taking steps to expand with America's defense needs, and to help fulfill civilian requirements as well. Besides increasing capacity at Barrett's Philadelphia and Ironton plants, plans are already under way for construction of new phthalic anhydride plants in Chicago and Phila-

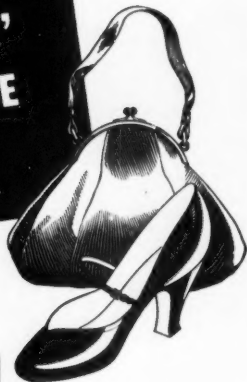
delphia. The Philadelphia plant is expected to produce 36,000,000 pounds of phthalic anhydride annually. It's a huge order, but it's an order Barrett intends to fill.



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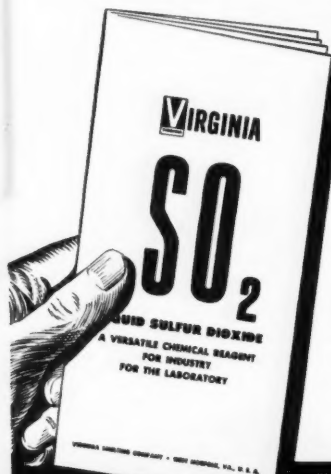
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OPINION

ITO is now a dead issue, it became necessary to find a new reason. Therefore, it has been stated at the hearings before the Ways and Means Committee on the present Bill that these changes in basis of evaluation will conform with our commitments under the General Agreements on Tariffs and Trade (GATT).

Certainly these reasons, either those given in 1950 or the ones being presented today, do not constitute customs simplification . . . therefore are not properly a part of the Bill now before the Ways and Means Committee.

Our industry knows only too well the kind of action the foreign chemical cartels would take to capture large segments of our markets. We would be the only major producing country in the world which would allow its industry to be undermined.

Either through licensing systems, or exchange control, all other major producing countries—England, France, Germany, Switzerland, Italy, Japan, Czechoslovakia, and Russia—maintain rigid controls for national defense. It appears to our Association to be only too obvious what our own policy should be. . . .

SIDNEY C. MOODY
President

Synthetic Organic Chemical
Manufacturers Association
of the United States
New York, New York

To Reader Moody, our thanks for a thought-provoking opinion, a valued extension to our tariff story.—Ed.

Unfair Remarks

TO THE EDITOR: We have read with interest your article (September 22), "Napalm Goes Automatic", but some of your remarks are unfair to World War II producers.

At least one plant produced Napalm at a rate approaching the capacity of Ferro's new plant, using a process which appears to have been as "continuous", at prices substantially less than 40 cents, rather than 3 times 40 cents, as you say.

We know because we did it, and we had plenty of competition!

A. E. VAN WIRT
Imperial Paper and Color Corp.
Glens Falls, N. Y.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: The Editor, Chemical Week, 330 W. 42nd St., New York 18, N. Y.



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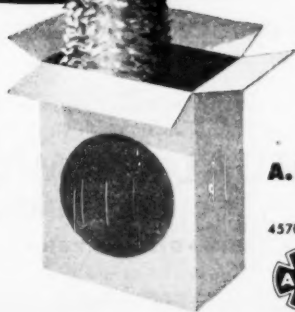
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NEWSLETTER

Don't let your hopes rise for a Government "facilities contract"—a new gimmick that guarantees against losses.

The new type of contract—outside of the usual DPA-RFC types of help—provides that the Government will buy the plant's output on a renewable annual contract at prices that guarantee a profit. If the contract is not renewed at any time before five years are up, the Government forks over the company's unreturned investment.

Early reports said the plan might be applied to chemicals. But that's not true. It will only apply to strictly military items, which have no civilian markets. Aviation gasoline makers are the only group now getting these contracts.

Fearless Senator Paul H. Douglas (Dem., Ill.) is trying hard to get some money for the National Science Foundation, whose \$14 million appropriation request was cut to a minuscule \$300,000.

He proposes a 5% cut in Defense Department's whopping \$1,470 million research budget. The cut adds up to \$70 million, and he'd restore a fifth of that—the \$14 million originally requested—to the Foundation.

By this means he'd provide for long-term, fundamental research at a cost of less than 1% of the armed forces' scientific research funds.

Lot's of beefing but no action, is the plaint of Washington associations representing industry and trade.

Item one: the price control hassle. The Administration is trying to substitute its own amendment for Capehart's (CW, Sept. 29) but businessmen are lethargic about fighting for their own best interests.

Item two: corporate taxes. Some members of the Senate Banking Committee understand industry's problems, are willing to fight higher levies. But unless they get businessmen's support, they'll lose out to those who rationalize, "Corporations don't vote."

Sulphur companies don't want the friend-losing responsibility of deciding who gets how much. Freeport Sulphur Co. has urged in testimony to the House Interstate and Foreign Commerce Committee that the Government undertake immediately to allocate sulfur supplies on the basis of essentiality to the national interest.

Since the Government controls domestic vs. foreign distribution, it should also, says Freeport, be held accountable for allocation of the domestic supply.

You can count on large quantities of isobutyraldehyde as soon as Texas Eastman starts operating at Longview about the first of the year.

Texas Eastman will obtain it as a co-product with n-butyraldehyde from a modified Oxo reaction (along with some minor by-products).

Du Pont is now the only maker, but it's pulling out since it needs the equipment for methanol manufacture. Du Pont makes it from isobutanol, sells it for 50¢ a pound.

Chief use: as an intermediate for calcium pantothenate, one of the B vitamins. Large-scale output may uncover new uses, however.

There's lots of oil in Alberta, but it will take an additional \$1 billion's worth of exploration and development before production equals Canada's requirements for 450,000 barrels a day.

Chances are that at least 5 billion barrels of reserves will be proved—enough to make the Dominion comfortably self-sufficient. But only 1¼ billion barrels have been proved to date.

The oil industry is spending about \$200 million on exploration and development this year—much more than production income.

It adds up to a sizeable "nest egg"; but it will be some time before Canada ranks with such current producing areas as the Southwest U.S., South America, and the ill-starred Middle East.

Textile yarns and fibers as well as chemicals will be produced by Celanese Corp. at Edmonton, Alberta. Previous disclosures of plans were strictly confined to chemicals—pentaerythritol, propylene glycol, formaldehyde, acetaldehyde and cellulose acetate.

Textile output will include 15 million pounds a year of staple fibre and filament yarn.

A further Canadian development will cause repercussions in the domestic pulp and paper industry—and, in turn, cellulose chemicals.

An industry-wide agreement gave 4,000 British Columbia workers a 16½% pay boost in settlement of their dispute with seven companies.

Cottonseed-oil foots and other vegetable oils are supplanting castor oil in C. P. Hall Co.'s new sebacic acid production.

The firm's Chicago plant is almost completed, will produce azelaic and suberic acids as well as sebacic. Gauge of their defense importance: DPA granted the plant a 60% rapid write-off.

Food and Drug Administration may be changing its mind on the use of chemical emulsifiers in food products. There are indications that some of the statements made by FDA spokesmen to the Delaney Committee a year ago don't coincide with the agency's thinking today.

No new evidence is alluded to, but it is now known that FDA chemists had a long-term test under way during last year's hearings. Likely conclusion: The results contradicted FDA's previous stand.

James Boyd, former head of Defense Mineral Administration and the Bureau of Mines, is leaving to join Kennecott Copper Corp.

Story behind it: DMA had complete responsibility over minerals development, little authority. Hence Boyd's position was untenable.

It remains to be seen whether Wilburn Schroeder, new DMA head, or Career Civil Servant Jess Larson, head of Defense Materials Procurement Agency (which took over many DMA functions), fare any better.

A million and a half allethrin-DDT aerosols is a healthy piece of business. The Navy is now examining bids for this quantity, will award a contract shortly.

Rainmakers are now trying to alleviate the Pacific Northwest's power shortage. Bonneville Power Administration has contracted with Water Resources Development Corp., Denver, to seed clouds over the area.

. . . The Editors

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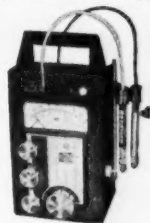
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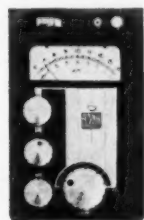
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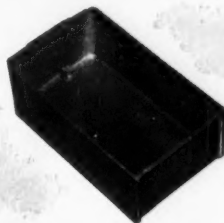
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BUSINESS & INDUSTRY

Five-Figure Round-up

Major executive positions in chemical industry go begging for occupants as executive talent shortage sets in.

Rapid expansion, lack of executive development programs given as two main reasons for shortage of top-level men.

High tax structure makes salary less important as companies offer added "extras" to fill key posts.

A problem in human arithmetic is presenting itself throughout the whole chemical industry: There are more top-flight executive jobs than there are top-flight executives to fill them. And the odds are that the situation is going to get a lot worse before it improves.

Like every other shortage that plagues the industry, this paucity of executive talent can be attributed to the strain of expansions. New plants make for overgrown company divisions, which by fission ultimately split into more numerous divisions. Also, new plants often bring new product lines and the need for greater service and sales forces. Hence, the cry for more executives.

Big Oversight: But the cry will go unanswered in most cases. For chemical managements, usually noted for their far-sightedness, have, in many instances fumbled the ball of executive development. While busy cultivating future raw material sources and markets, many have let executive talent grow sparse and untended.

Breadth Needed: Ordinarily, the top-level posts in the industry could be filled by middle-level executives. But the chemical industry, because of its technological basis, has produced too many specialized middle-level executives, men proficient in only one operation of the company. As a consequence, only some of the larger companies, with formal executive development programs have a talent pool on which to draw for the multifaceted talent needed at the top. The small companies faced with expansion are having a difficult time spreading their executive supply over their growing operations.

Ten Years Lost: But there are many other factors contributing to the emptiness of five-figure executive positions. Not the least of these, according to one major management con-

sultant to the chemical industry, is the fact that many middle level executives, now in their early forties, have lost 10 years out of their normal industrial careers: five years in the 1930 depression and another five in World War II.

Lucky Few: Because of the workings of the law of supply and demand, the competent middle- or top-level executive in the chemical industry now finds himself in the position of being able to pick and choose his employer to his heart and bankroll's delight.

The high income tax era, however, has made remuneration in terms of straight salary less important than before. Bonuses, pension and retirement plans, and extremely generous insurance programs nowadays are being offered to tempt the interested executive. And stock inducements, lush expense accounts and even memberships in country clubs are being thrown in to swing his decision to work for company A instead of B.

A new high was hit along this line last week when one major manufacturer lured a competitor's vice-president away by the bait of a house in the country.

Oscared Reports

Plaudits for chemical companies with outstanding annual reports came this week with the awarding of bronze Oscars to 11 companies in different chemical process industry fields.

The chemical companies selected to receive the encomiums were among the 5,000 firms submitting reports to *Financial World's* annual survey. The chemical winners are among 100 Oscar winners who are eligible for a final judging of a single "Oscar for Industry" award.

The judging was based on four main points—telling a full and com-

plete story for prospective investors; being complete from the accounting standpoint; giving a full picture of the year's activities, both from the financial and the public relations standpoint; and use of good artistic and typographical design.

Industrial Chemical Winner: In the volume chemical field, Commercial Solvents received the bronze Oscar, with Monsanto, last year's winner, coming in second and Hooker Electrochemical third.

In petroleum, first award went to Jersey Standard, which two years ago copped the all-industry award. Gulf and Phillips rated second and third.

Winner in a "drug store products" classification was Colgate-Palmolive-Peet, with Abbott Laboratories and Bristol-Myers tailing close. In rayon manufacture, Celanese Corp. held honors, American Viscose placed, and American Enka showed.

In the rubber and tire field, ratings went to Goodyear, U.S. Rubber and Dayton. In plastics, Minnesota Mining and Manufacturing received the Oscar, with American Phenolic and Dobeckmun as runners-up.

Photographic winner was Eastman Kodak, second and third place ratings went to General Aniline & Film and Haloid. In the pulp and paper industry, Champion Paper took first, International was second and Crown Zellerbach, third.

No Hydrogenation

Chemicals from coal by means of hydrogenation has come to a near-stop. DPA is taking its time studying the Department of Interior-backed proposal of chemical financier, Ferdinand Eberstadt, to build a privately financed plant. Informed sources say the slow-up is a calculated stall. The decision has already been made. The answer: No.

The Eberstadt-proposed plant would produce between 15,000 and 30,000 bbls/day of gasoline, benzene, phenol and toluene; would cost from \$300-400 million. Although privately built, erection of the plant is predicated on the government's guarantee for the ten-year purchase of its output.

Before giving this guarantee, DPA has called on Secretary of Interior, Oscar Chapman, to produce more in-

formation. Particularly desired are estimates of how much the government proposes to lose on the "price support" operation.

These estimates supposedly would come from the 200-bbl-a-day demonstration plant for coal hydrogenation at Louisiana, Mo., which the government has been operating since May, 1949. Another coal-to-oil unit is also being operated. In this 80 bbl-a-day plant coal is converted to synthesis gas; oil is then formed from the gas.

Although Interior's work was started for "research", Interior argues that going into the coal hydrogenation business is a logical extension of this work which is being carried on under the Synthetic Liquid Fuels Act of 1944. But Interior is bucking some powerful and pertinent reasons against erection of such a plant either under a government guarantee to buy all of the product or by the government itself.

Three "Nays": First, most of the oil industry is opposed. It argues that there is sufficient petroleum, that money would be better spent on research.

Second reason, and at the moment the most important of all, is the shortage of structural steel—200,000 tons would be required for the plant. And that is as much as the chemical industry is slated to get for the next thirty months.

A third, often unstated reason is that the Interior Department is involved. Many see this as just another socialistic Government-in-business deal despite the Wall Street backing furnished by Eberstadt. If the plant could be operated without the government guarantee against loss, many more supporters could be found.

As is customary in these cases where government bureaus can't get ahead under present laws, a bill has been tossed into the Congressional hopper. The general setup would be that employed in the manufacture of synthetic rubber: Interior would be given the right to build plants if private industry didn't, or to guarantee to buy the products of a privately-operated plant.

Even if the bill should not pass, Interior may get help this winter if there is a shortage of home heating oil on the East Coast. Gasoline rationing, unlikely for some time to come, would also provide an assist.

Inertia: Right now there is no gasoline or oil shortage. And without such a shortage to provide the needed scare, Congress will be hard to move. The answer should remain no for some time to come.

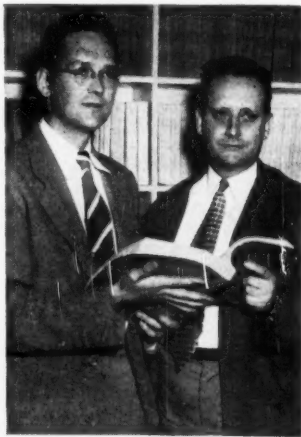


SCHLAUDECKER, BALCH, JOYCE: Big plans for a small company.

Picking Up Speed

Its five joint owners are laying out an ambitious program for small-but-promising Maumee Development Co. (Ohio). Encouraged by successful tests on saccharin produced by their new process, they plan to expand their present line, also to move into a new home in Toledo.

Chief claim for the saccharin produced is that it has no bitter aftertaste, even after heating and cooking. Maumee is now readying for commercial exploitation of the process and hopes to have it in production by March of next year.



WILLIAMS AND SENN: Two-fifths of the joint enterprise.

At present, Maumee is producing phthalimide and anthranilic acid. Used in pharmaceuticals, colors, flavoring and perfume oils, the anthranilic acid is produced in a grade that is said to be a suitable replacement for the more expensive sublimed grade. Phthalimide is used as a dyestuff and drug intermediate and for Gabriel syntheses; the firm produces it in the form of readily soluble porous particles. And according to the owners, that form too can mean a substantial saving for the customer.

On tap for next year is a fourth product, dithiosalicylic acid. Never before produced in commercial lots, the material may prove useful in the production of rubber chemicals, pharmaceuticals or as an intermediate for dyestuffs and pharmaceuticals.

Hectic Start: Maumee was formed a little over five years ago by four men: Schlaudecker, Balch, Senn and Joyce. They started by running a solvent-recovery process for several local firms in order to get funds to carry on their research. Since none of them was drawing a salary, they had to find jobs until they could put the business on a sounder financial basis.

At the time, the University of Toledo was staggering under a heavy enrollment of war veterans. Balch, Senn and Schlaudecker became college professors—arranging their schedules so that one was in the lab while the others were teaching.

Joyce, the fourth member, went to work as a plant superintendent for the Plaskon Division (Libbey-Owens-

Ford). There he found the fifth member of the team, Bill Williams.

The firm has come along way since that time. It plans eventually to spread out into esters of the acids it is now producing. And since the company is quickly outgrowing its present facilities, the owners plan to move into a multi-story building in Toledo in the near future.

Rock Revolution

The sulfur shortage is reawakening interest in TVA's four processes for treating rock phosphate with nitric acid instead of sulfuric. In cooperation with the USDA, Mathieson Chemical is studying economic aspects. And if nobody steps up with plans for a commercial plant, TVA will build its own to produce 50,000 tons a year.

Funds for the TVA plant, however, will come under next year's budget (July '52-July '53). TVA is the first to admit that "a lot can happen between now and then."

Other chemical companies besides Mathieson are taking a hard look at the process, and farmer cooperatives have been particularly attentive to TVA developments. One cooperative in Alabama has tentative plans for a 50,000-ton plant.

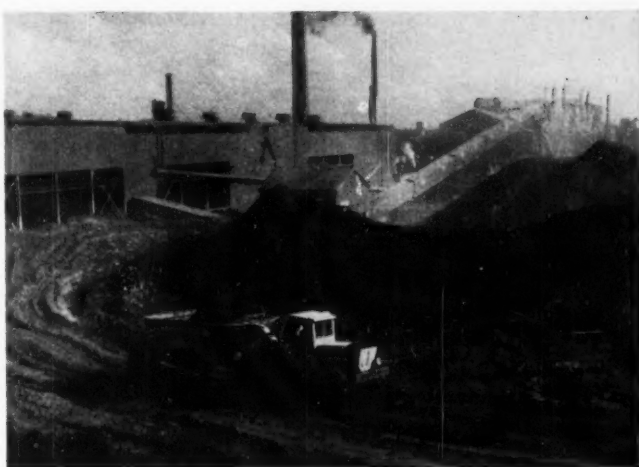
Present phosphate production in this country using nitric acid as a replacement for sulfuric is confined to TVA's four-ton-a-day pilot plant. But the idea has gained widespread acceptance in Europe. Norsk Hydro (Norway), the Netherlands State Mines, I. G. Farbenindustrie (Germany) and the Societe Potasse et Engrais Chimique (France) have successful processes. Imperial Chemical Industries, Ltd., has one in the pilot stage.

American experts, of course, are quick to point out the big difference in economics. In this case, the argument carries added weight because of the sorry plight of European sulfur supplies.

Cheap, Too: But TVA claims that—for producers with "captive" ammonia and nitric acid facilities—a plant using the process could produce the cheapest phosphate fertilizer in the world. In any event, many feel that the long-term sulfur picture is enough incentive to think twice about the processes.

On paper, the idea looks like a slick way of conserving sulfuric acid—just use nitric instead. Actually it's not that simple; nitric acidulation results in the formation of calcium nitrate.

Two European processes (Norsk Hydro, Netherlands State Mines) sep-



PHOSPHATE: TVA says it's cheaper with nitric.

arate the calcium nitrate and sell it as by-product. TVA decided that the separation would be cumbersome, expensive; also thought the calcium nitrate would have a questionable market in this country. Concentrating on the other processes, it refined them, came up with four that look "commercially promising."

One of the processes involves acidulation with a mixture of nitric and sulfuric acids, another with nitric and phosphoric. Sulfuric requirements for the first are about half those for ordinary superphosphate production; phosphoric requirements for the second about a third those for triple superphosphate production. In both processes, acidulation is followed by heavy ammoniation.

The third process consists of treatment with nitric, ammoniation and addition of potassium sulfate. In the fourth process, the rock is treated with nitric acid, then with ammonia and carbon dioxide. The resulting calcium carbonate is filtered out.

Pro and Con: One big objection to the processes is that any one of them would entail a revamping of our fertilizer technology. Industry is under-

standably reluctant to make such a change.

A more tangible objection is that process installation would require heavy capital investment for stainless steel equipment. Added to this is the fact that stainless is in tight supply.

On the other hand, many experts point out that stainless is not the only (or even the best) material for handling nitric acid. They feel a cheaper, more available substitute could be used. That would require extensive pilot plant runs, would be a long-range solution at best.

Another objection to a process switch is that it would divert nitric acid from ammonium nitrate and sodium nitrate—both in short supply. That would be partly compensated for by the ammonium nitrate formed in each of the four processes.

Strictly on the credit side: A switch to inexhaustible nitric would be a big factor in conserving our dwindling brimstone reserves. That has moved some experts to say that an eventual shift to one of the processes is inevitable. Others are more conservative, but all agree the idea is well worth watching.

Current List of DPA-Certified Chemical Facilities

COMPANY	LOCATION OF FACILITY	PRODUCT	AMOUNT ELIGIBLE	PERCENT
Aluminum Ore Co.	Mobile, Ala.	Aluminum	\$ 12,000,000	80
Koppers Co., Inc.	Warren Township, Ohio	Pitch coke		60
Aluminum Co. of America	Milam County, Tex.	Primary aluminum	115,000,000	80
Southern Alkali Corp.	Corpus Christi, Tex.	Chlorine and caustic soda		50
Blackwell Zinc Co., Inc.	Blackwell, Okla.	Zinc concentrates	586,390	60
Gulf Oil Corp.	Port Arthur, Tex.	Sulfur	80	
Hancock Chemical Co.	Long Beach, Calif.	Sulfur	250,000	80



BARR AND EMPLOYEES: Crutches rest from 5 to 5.

Ability, Not Disability

Chemical companies find physically handicapped make good employees, are tapping this 11½-million-worker reservoir to ease labor pinch.

Record shows that such workers, when properly placed, equal or surpass performance of unimpaired personnel.

"Handicapped," as applied to a potential employee, is a poor word choice leading to a false assumption. Physical handicaps are not necessarily job handicaps. Properly fitted to his job, an impaired worker shows no signs of a handicap to the onlooker nor—more important—to the production superintendent.

That's the message 1½ million physically handicapped available for employment are trying to get across to businessmen during National Employ the Physically Handicapped Week, Oct. 7-13. They are looking for a chance, not charity.

But the chemical process industries have not waited for NEPH Week. Among companies already tapping this pool: Minnesota Mining & Manufacturing, Procter & Gamble, Glidden, Du Pont, Elliott Paint & Varnish Acme Printing Ink, Lucien LeLong, Murine Co., Jas. B. Day & Co., DeWitt Co. and G. Barr Co.

The latter, a leading aerosol custom filler, is outstanding, and its owner, George Barr (himself an amputee) is the first recipient of a Presidential Trophy which will be awarded annually to a handicapped American who has made an outstanding contri-

bution to employment of the handicapped.

Don't Stick Out: Barr recently led a CW editor on a whirlwind tour of his plant. Questioned, "But where are those handicapped workers you employ?", he grinned slyly and said, "You've been watching them on every production line." For of the 80-odd workers his company employs, 60 are impaired—but not handicapped.

Fortunately for them, they didn't meet the "No Help Wanted" sign that usually goes up when an impaired person applies for a job. Such blanket refusals come from employers' ignoring ability to do a job and placing undue importance on what the applicant cannot (and actually need not) do.

Barr sums it up, "A man doesn't need feet or legs to hand-feed a machine, sight to pack or gage, hearing to operate or repair a machine. If what he has left is what the job requires, he'll be a better worker than the unimpaired."

Man Who Knows: And George Barr knows what he's talking about. An honor graduate of the University of Wisconsin in 1933, he went to work for a specialties concern in St. Paul. Part of his job was running samples

of new cosmetic formulations to a co-operating beauty shop across the street for practical testing.

He had been on the job a scant three months when he failed to see an automobile coming one day. Result: His left leg is now, as he terms it, "peg"—yet he walks at a brisk pace with no sign of a limp.

Upon his release from the hospital, he could find no willing employers in St. Paul, so he moved to Chicago where he thought opportunities might be better. But they weren't. He finally went into business for himself with a new hair wave formulation. Nights he mixed; days he sold.

Needing help, he hired a deaf-mute friend, Mitchell Echikovitz, from his home town. Mitchell became a partner and suggested their next employee, a jobless deaf-mute girl (who later became Mitchell's wife).

One day as he operated a labeling machine, Barr suddenly realized that only one leg was needed to press the pedal, and hired a one-legged man for the job. The firm grew, and so did the number of its impaired employees—four years later 18 deaf-mutes were on the payroll. Nor did they hurt the business, for by 1946 Barr grossed \$5 million. And trend-wise, the company branched into aerosols about two years ago, today is doing a whopping business in them.

Business, Not Sentiment: Barr, no moist-eyed idealist with a haven for the helpless, hires these workers because they produce. In fact during World War II, they outproduced a large drug concern employing more (and unimpaired) workers for a comparable job, won two Army-Navy "E" awards. Fittingly, the presentation was made by a soldier on crutches who'd left his leg at Anzio; the acceptance, by a blind boy who made a speech and two deaf employees who used sign language.

Much of such outstanding productivity can be traced to side effects of impairments that often yield job superiority: Crutches develop strong arms which can feed a heavy machine with greater ease than those of an unimpaired worker. Constant conversation in sign language means greater proficiency in work requiring finger dexterity. Reading Braille helps the blind person turn out a better job where sensitivity of touch is important.

Hard facts and figures gathered by Government agencies and private organizations back up Barr's beliefs. Widest in scope was a two-year study made by the Department of Labor and the Veterans Administration which showed that, properly prepared

BUSINESS & INDUSTRY.

and placed, impaired workers can—and do—equal or surpass the performance of unimpaired workers in identical jobs.

Not only do their particular handicaps often result in physical superiority for a job, but they adjust quickly to job conditions and can do any kind of work where their impairment is not a factor. Regular and reliable, absenteeism presents no problem, and they are less apt to be job-hoppers.

Safety is where they really shine, for they seem to be extra careful. Statistics proving the better safety average of the handicapped give the lie to rumors that their employers suffer insurance hardships. A recent statement of the Association of Casualty and Surety Companies shows how groundless such fears are; it says in part, "... Whether a company is staffed with workers having two legs apiece, or one, or none—influences the [workmen's compensation insurance policy] rates not at all."

Available Pool: The physically handicapped number about 6 million—roughly 10% of the present labor force. During the ten years selective placement by state employment services has operated, about 2 million have been placed in jobs. Others merely need a chance and some preliminary training.

Rehabilitation by U. S. Employment Service and the Veterans Administration constantly makes more available, and there are now about 1½ million who could do useful work. Doctors from these organizations and over 200 private agencies cooperating in the program match abilities against job

qualification before recommending placement.

Chemical companies who have tried these workers have found nothing lacking. Minnesota Mining, for example, was so pleased with 100 returning disabled war veterans that it set out to find jobs for other handicapped persons, has hired an additional 150. Here again proper placement was stressed.

President Truman has pointed out the economy of putting to use this vast reservoir of skills that can be a bulwark against the present threat of manpower shortage. He has asked for greater opportunities for employment and rehabilitation of the handicapped not only during NEPH Week, but during all 52 weeks of the year. The chemical industry has shown it is not missing this good bet.

Chemicals Unsnarl

The National Production Authority took another step last week to unsnarl the chemicals distribution mess that has been bringing anguished cries from the chemical industry for months. **Result: From now on Defense Orders for chemicals will be limited to Defense Department and Atomic Energy Commission contracts.**

The crescendo of complaints from the chemical industry over the complete disruption of normal distribution pattern had risen to such a point in the last few weeks that NPA had to do something fast.

Three Way Relief: The new order will do three things, says NPA:

- Clear the way for prompt filling of

vital defense needs. Until now these orders have been in danger of being delayed by competition from Controlled Materials Program priority orders.

- Deflate the abnormal demand for certain chemicals which developed when CMP ratings were widely used to buy them, where other substitute chemicals had been used before.
- Encourage conservation of chemicals, and the use of substitutes where possible.

Above all it will untangle the distribution of chemicals and bring some relief to harried producers.

Priorities Monkey-Wrench: What has happened is that chemical firms have been swamped with orders from holders of CMP priorities. A holder of CMP allotments for steel, copper, or aluminum, gets a priority on anything else needed to go ahead with his program (CW, Aug. 18). These were the ones fouling up the whole distribution setup of the chemical industry.

The customer with a CMP priority would order the chemical he wanted, where he wanted it, and as much as he needed. He didn't have to take substitutes, even though he may have been using these substitutes for years before touched with the magic wand of a CMP metal allotment.

As a result, CMP orders piled up for certain chemicals, in some cases amounting to more than 100% of production, when under normal use patterns the supply should have been adequate. Not only were certain chemical producers overloaded, but the poor fellow with no CMP metals allotment, no matter how vital his product to defense, was out in the cold.

But now only authentic Defense Department or AEC work will bring OD's for chemicals. Everyone else will have to get chemicals by the normal market procedure.

New NPA Branch: The chemical Division of the National Production Authority is centralizing a number of scattered, but important, functions into a new Facilities Branch.

The new section will have three main assignments: (1) helping companies get priorities for chemical equipment and containers; (2) processing form 4-C applications for controlled materials needed in expansion programs; (3) handling problems involving the use of non-ferrous metals by the chemical industry.

Heading the branch will be Leroy C. Stewart, manager of Dow's Atlanta, Ga., sales office.



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HEFTY HOGS: Organic arsenicals pave the way to bigger ones.

Better Growth with Arsenicals

Antibiotics and vitamin B₁₂ aren't the only things causing significant growth in animals. An organic derivative of arsenic now on the market in small quantities may stimulate more animal weight on the same amount of feed.

The chemical is 3-nitro-4-hydroxy-phenylarsonic acid, and it's been shown to help hogs, chickens and turkeys attain up to 48.8% more growth than animals on a control ration.

The investigational work was done by the University of Minnesota's Hormel Research Institute, located near Austin, Minn., home of the Hormel Packing Co.

Recommended level for the arsenical in feed is 0.00675%, which means that a pound of the substance will treat about 8 tons of feed. At this level no toxicity has been observed, and if the animals are taken off the arsenic-containing diet for a week just before marketing, the arsenic content of the body returns almost to normal.

Disease Treatment: In addition to its growth-stimulating properties, the compound can also be used to treat bloody dysentery in swine. This therapeutic property of the compound is a discovery of the past few months, while research on its stimulating properties has been in progress for better than two years. Despite the testing and the fact that the drug is now being marketed,* Dr. Laurence E.

Carpenter, who did the work, feels that the drug "still must prove itself."

One worry on the part of researchers is the sinister connotation of the word "arsenic." Whereas antibiotics and vitamin B₁₂ have nothing but good connotations, arsenic is a poison. The general public, moreover, has been made chemicals-in-food conscious by scare stories in consumer magazines.

Accusations of alleged cumulative toxic effects on the meat-eating public is one which has researchers worried. While the level in the animals themselves is too low for accurate measurement using present techniques, undoubtedly someone will accuse meat packers of slowly poisoning the country's "150 million guinea pigs." To be on the safe side, researchers are continuing toxicity studies.

Singly or Combination: At present, no black-and-white statement can be made as to whether arsenicals give more gains than antibiotics, or whether they are more effective singly or in combination. Dr. Carpenter reports, however, that the arsenicals may produce results when antibiotics fail.

Other research groups, working with related arsenical compounds—supplied by Abbott Laboratories—have been able to show that these bring weight gains in poultry. The whole field, because of its growth-stimulant properties and its medicinal qualities, seems to be one where there's still a lot of room for investigation.

* By Dr. Salsbury's Laboratories, Charles City, Iowa.

Not, PLEASE, In the Name of Fairness

Our national Office of Economic Stabilization has adopted a policy of gearing wages to the cost of living. We are told that "escalator clauses," which provide that rates of pay shall be adjusted to take account of changes in the cost of living, will be generally approved.

If the adoption of this policy had been announced as a frank concession to political expediency, it would have been quite understandable. There may very well be votes, lots of them, in a policy which purports to protect the income of a large group against loss through the price inflation caused by the defense program.

A case might even have been made for a policy of approving escalator clauses on grounds of production expediency. The leaders of some three million organized workers now covered by such clauses have indicated that they would fight to the limit to keep them and thus maintain "real wages," that is, wages measured by their purchasing power. The leaders of other organized groups have indicated they would fight to get the

benefit of such clauses. Denial of them might mean serious strikes.

Justified "in Fairness"

However, the policy of approving escalator clauses was not based on these relatively low grounds of expediency. It was justified on high moral grounds, on grounds of "fairness." In the words of the President's Council of Economic Advisers, "maintenance of real wages during inflation cannot in fairness be disallowed."

That proposition is false.

It would be truthful to say, "maintenance of real wages during inflation cannot in fairness be allowed."

The truth of the corrected proposition becomes evident immediately when you take a look at the basic nature of the inflationary problem created by defense mobilization.

We are devoting a large share of our national production to defense. The share is now scheduled to hit about 20% in 1952.

Since we are not able to increase our total production fast enough to meet defense needs

in addition to civilian needs, that means a cut in the supply of goods and services that is available for civilian consumption. But the money paid out for the production of defense materials is added to that which is available to buy civilian goods.

Thus, more money is put into the hands of the people to buy less goods. So prices go up. That is inflation.

If one group of people then is granted enough additional money to offset the price increases — and that is the purpose of an escalator clause — and thus can continue to buy as much as they have been buying right along, less goods will be left for other consumers who are not getting this advantage. That is palpably an unfair distribution of the sacrifices necessitated by defense mobilization. In fairness, therefore, maintenance of real wages in inflation cannot be allowed.

Organized workers were not the first, of course, to get the benefit of an automatic adjustment to take account of the increased cost of living. The farmers got theirs first. The price parity formula is, in essence, an escalator clause. The federal government underwrites increases in the prices of the things farmers sell in order to match increases in the prices of the things they buy.

Crucifying the Helpless

As matters stand, two groups are without benefit of escalator clauses. One group is composed of manufacturing firms. While they have not been nearly as successful as the misleading reports of "record-breaking profits" suggest, they have been able to look after themselves fairly well — thus far.

But one group is completely without protection. It is that numerically large but politically unorganized mass of people — many of them old and relatively helpless — who are trying to live on pensions, annuities and other fixed incomes derived from their savings. They are at the end of the line when the increased costs of inflation are passed along. They have no one to whom they can pass the buck. They are being progressively pauperized by the continuing inflation caused by progressive boosting of costs and hence prices.

With the present line-up of pressure groups in Washington, protection for the principal victims of inflation — those who have saved for a rainy day only to find inflation has blown away the roof — is obviously an extremely difficult business. But to have even temporary insulation against inflation granted to powerful groups in the name of fairness should be offensive to the nostrils of a nation that presumes to assert the moral leadership of the Western World.

The only really fair way to handle inflation is to prevent it. But once it is under way, fairness demands that the burdens be as evenly distributed as practicable.

An escalator clause — or a farm parity provision — is explicitly a device to enable the group favored by it to escape the burden of inflation. Whatever concessions we feel we must make to political pressures or production expediency, let us at least be honest enough not to invoke "fairness" as justification for so arbitrary a discrimination in the distribution of the defense burden.

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FOREIGN.

France: Representatives of France's alcohol, chemical, and petroleum industries are studying the possibilities of competing with the United States and Canada for the world's synthetic rubber markets.

A study group has been set up to examine the practical possibilities of establishing a synthetic rubber industry in France as an outlet for surplus French alcohol production. French alcohol output amounts to some 26½ million gallons annually. This means that minimum production of synthetic rubber would have to be 40,000 metric tons annually to put the industry on a sound basis. But French synthetic rubber consumption is only 12,000 metric tons a year; hence the study of export possibilities.

Canada: Help for nickel-starved industry will soon be coming from Canada now that the \$17 million expansion at International Nickel Co. of Canada's Creighton Mine is in full operation.

Improvements are a new shaft and a new 10,000 tons of ore a day concentrator. The project is just one in the company's program of expansion which will result in a production of 13 million tons of ore annually by 1953, compared to 5.7 million in 1950.

France: French imports of woodpulp will be reduced by about \$3 million when a new plant to produce pulp for the artificial textile industry goes onstream.

The plant, to be built near Rouen by the Societe de Cellulose d' Alizay, will produce 30,000 tons of pulp a year, or a quarter of the French textile industry's annual imports.

Mexico: The Mexican sulfur industry estimates that increased production at the Petroleos Mexicanos Poza Rica gas washing plant will be a major factor in making 8,000 tons of sulfur available for export by the end of the year.

The plant has been producing 110 metric tons a day, and will increase to 140 tons a day.

Spain: A plant to manufacture dye intermediates and explosives will be built at Torrelavega by Koppers Co. under a contract from Real Compania Asturiana de Minas. Koppers will design the plant and furnish the equipment.

The plant will produce dimethylaniline and certain explosives. Materials

will be purchased mainly in the United States, and will be shipped to Spain late next March.

EXPANSION.

Chlorine-Caustic: Monsanto Chemical Co. has signed a contract with the Chemical Warfare Service to operate and maintain the new electrolytic unit for manufacture of caustic and chlorine at Muscle Shoals, Ala. The new plant is being erected by Monsanto and Leonard Construction Co. and will use the De Nora mercury cell.

Smoke and Fume Control: Kaiser Aluminum & Chemical Co. will soon begin installation of smoke and fume control equipment at its Mead Alumina reduction plant near Spokane, Wash. Cost: \$4 million. Hoods will be installed over the electrolytic cells and air suction will be used to draw off fluoride-containing smoke for scrubbing before discharging it to the atmosphere. Surveys had shown that the fumes were harmful to plant life in the vicinity.

Liquid Oxygen and Argon: Ground has been broken for Linde Air Products Co.'s new plant for the manufacture of liquid oxygen and liquid argon at Ashtabula, O.

Carbon Black: Southern Louisiana, near Franklin, will be the location of United Carbon Co.'s new \$2 million plant to manufacture oil-base furnace black of the high abrasion type. To go on stream by spring, the 30 million pounds per year output will find its principal outlet in the reinforcement of cold rubber.

Bodied Oils: Archer-Daniels-Midland Co. has purchased a tract of land in the Los Angeles' Central Manufacturing District. Scheduled for completion by September, 1952, the new unit will produce bodied oils, chemically modified oils and varnish products.

Girdler Corp.: A 16-acre tract has been purchased by Girdler Corp. at Louisville, Ky., for "purposes of expansion". According to George O. Boomer, Girdler president, the company has run out of room at the present location.

Expanded Perlite: Tennessee Products and Chemical Corp. plans to build a perlite plant at Jacksonville, Fla. Perlite is a volcanic glass which can be expanded by heating into a lightweight building material aggregate.



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Raw material for the plant will be shipped in from Nevada and New Mexico.

The company also recently purchased the Muehl-Lite Corp.'s perlite plant in N. Little Rock, Ark.

KEY CHANGES . .

Cary R. Wagner: To senior vice president, Dyestuffs and Chemical Division, General Aniline & Film Corp.

John C. Franklin: To vice president of operations of General Aniline Works, Dyestuffs and Chemical Division, General Aniline & Film Corp.

Paul W. Hiller: From manager, products development department, Innis, Speiden & Co., to New York district manager of sales, Potash Division, International Minerals & Chemical Corp.

Emmet C. Thompson: Retired as general manager, Grasselli Chemicals Department, E. I. du Pont de Nemours & Co.

Clark W. Davis: To general manager, Grasselli Chemicals Department, Du Pont.

Harold C. Weingartner: To vice president and general manager, Equipment Division, National Research Corp.

Stanley B. Elliott: To vice president and general manager, Ferro Chemical Corp.

Albert W. Dunning: To vice president, Monsanto-Kasei Kogyo, K. K., Japanese subsidiary of Monsanto Chemical Co.

John J. Russell: From vice president in charge of production, National Glaco Chemical Corp., to director of special research, Midland Industrial Finishes Co.

Charles G. Whinfrey, Jr: To sales supervisor, agricultural chemicals department, Pennsylvania Salt Mfg. Co.

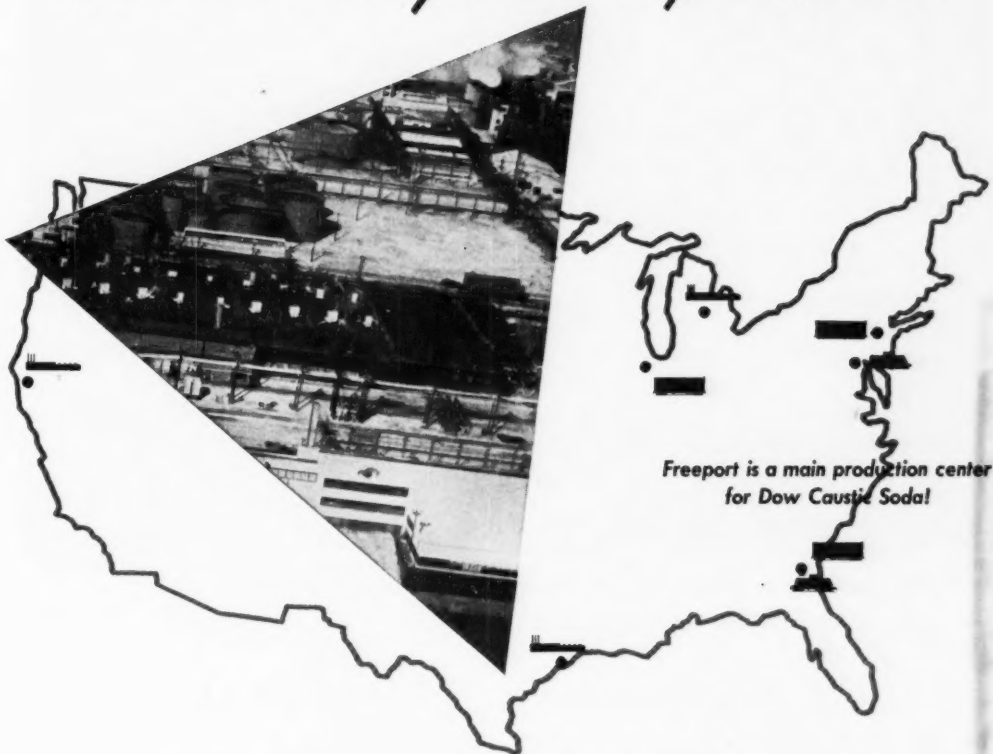


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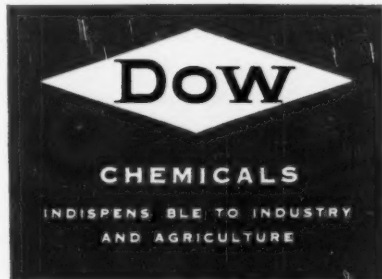
and Charleston, South Carolina. Dow also distributes caustic soda solid, flake and ground flake from terminals in Chicago, Illinois, Port Newark, New Jersey and Charleston, South Carolina. Take advantage of Dow's distribution facilities . . . and receive prompt and dependable caustic soda delivery!

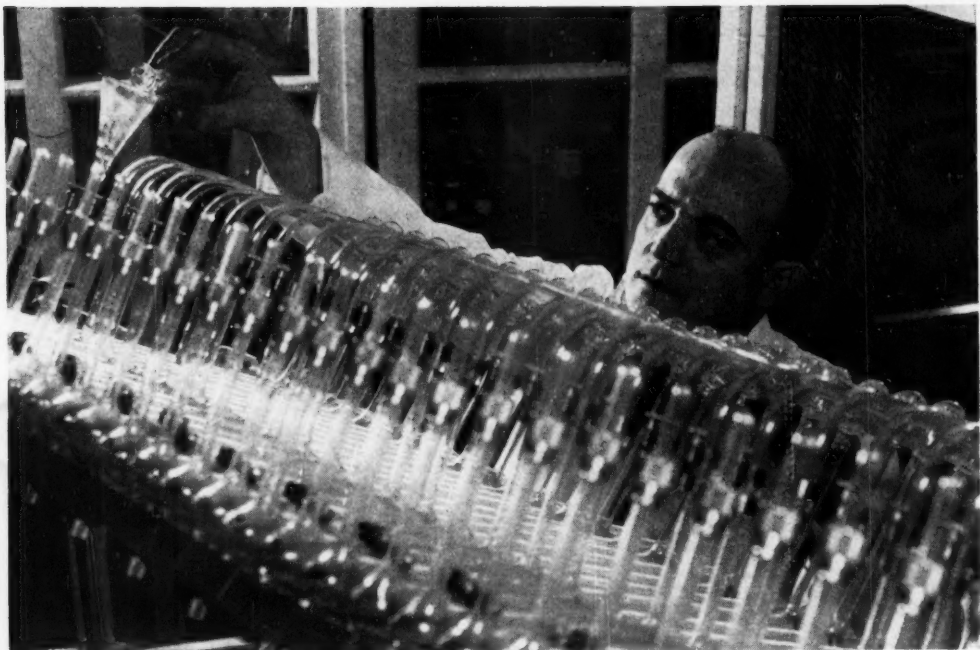
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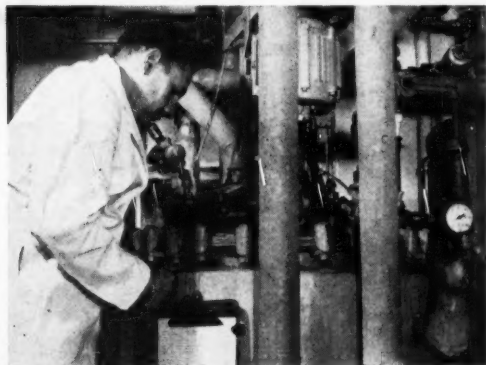


BIRTH OF A NEW DRUG starts with separation of different fractions of an experimental fermentation. Frank Ablondi, who led the team which discovered Varidase, makes the separation using a Craig counter-current extractor.

RESEARCH Many Sciences, Many Skills

The conception and birth of a new drug is a complicated process. Once in a turtle's age it may take place in weeks or months, but far more often it takes years of work by many laboratory research teams.

Lederle Laboratories Division of American Cyanamid Co. is representative of most large drug firms in its diversity of testing and research divisions which are called upon during the journey from conception to commercial production.



FERMENTATION is the key to production of many antibiotics and enzymes. Bacterial fermentation manager checks foaming.

The starting point may be the biologically active extract of some plant. Researchers in the biochemical division may attempt to separate the crude substance into its fractions with such equipment as the Craig counter-current extractor; these fractions may then be tested by groups working in experimental biology with live animals, virus-infected eggs, or bacterial cultures.

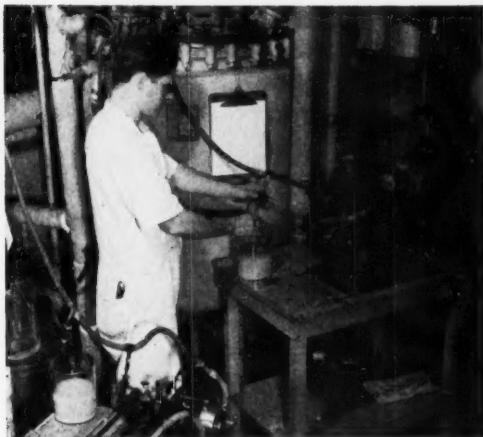
Then farther along, production may include complicated fermentations, sterile techniques, or tedious concentrations which are difficult to carry out. And the *sine qua non* of all pharmaceutical production is continuous testing.

Typical, insofar as many sciences and many skills were brought to bear on its development, is Varidase—an enzyme preparation introduced this summer (CW, June 30) to clear away clotted blood, pus and dead tissue from wounds.

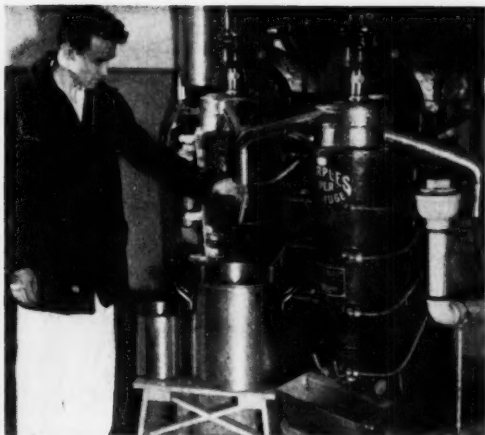
The potential usefulness of the two active enzymes present—streptokinase and streptodornase—was observed and published in the early '30s. No large-scale production methods were known, however, and clinical trials had to await development of a sure production technique.

A research group headed by Frank Ablondi tried thousands of fermentations until optimum conditions were worked out. Equally time-consuming were toxicity tests, and determinations of suitable separation, purification and stabilization methods.

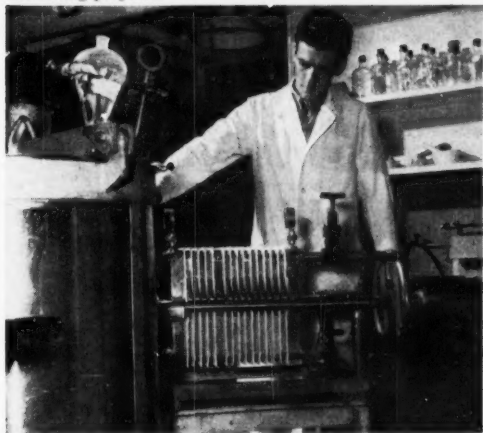
The last big job is still going on: making the world's physicians aware of the new tool they have at their disposal, what it can do, and how to use it.



FERMENTATION LIQUOR is sampled by a Lederle operator for testing purposes.



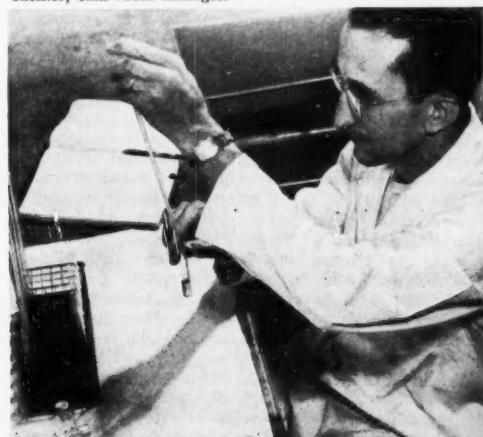
CLARITY IS KEYNOTE in quality of effluent from centrifugal refining process.



FILTER PRESS refining operation is conducted by Kenneth Richter, chill room manager.



STERILE CONDITIONS are necessary during all enzyme refining operations.



DILUTIONS for testing are set up by Varidase Assay Laboratory chief, Clifford Laird.



VISCOSITY CHANGES are sometimes the only practical gauge of final enzyme potency.



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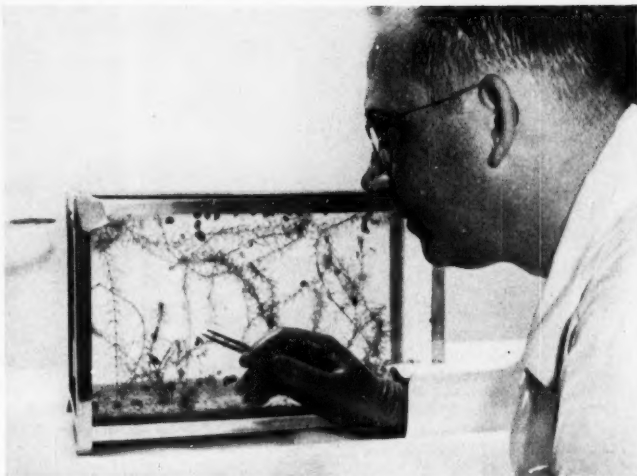
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RESEARCH



Snail Farm in Research Lab

BECAUSE PARASITOLOGIST Redginal Hewitt is concentrating his research on schistosomiasis these days, Lederle Laboratories has a snail "farm" at its Pearl River, N.Y., location. The snails, of which there are 15,000, are used as hosts to develop embryos of tropical worms known as schistosomes. These are injected into mice, where they grow to mature worms, producing schistosomiasis, a disease of high worldwide incidence. Hewitt tests new drugs on the mice to check their efficacy as cures.

Non-AEC Isotopes

Production of isotopes by private companies moved out of the talking stage this month as the Atomic Energy Commission accepted the proposals of two firms to study its processes.

The two companies with which AEC signed contracts allowing them to explore the commercial feasibility of making, processing and selling radioisotopes are Bendix Aviation Corp., Detroit, and Tracerlab, Inc., Boston. They will carry out the work at their own expense.

Wider commercial use of radioisotopes is the ultimate goal of the new projects. First step will be a study of AEC's isotope-processing program and an investigation of the possibilities of building and operating reactors to produce radioisotopes.

After security requirements have been satisfied, reactor data in this field will be made available to small groups of scientific personnel from both companies. AEC will help them in their studies by supplying experts from its organization and its contractors. Within a year, both companies will make their reports and evaluations directly to the AEC.

Although AEC is eager to see private groups assess the commercial possibilities of some segments of the atomic energy program, its current

expansion program is so pressing that it can't consider additional proposals for this type of investigation at this time.

Research Chemicals: Sigma Chemical Co. (St. Louis) has begun producing limited amounts of five research chemicals. They are highly purified tris(hydroxymethyl)aminomethane, available in laboratory quantities; pregnanediol glucuronide and estriol glucuronide, available for research purposes; and the enzyme, glucose-6-phosphate dehydrogenase, as well as high-purity glucose-6-phosphate, both in research quantities.

Tris (hydroxymethyl) aminomethane is of interest as a biochemical buffer and primary standard. Pregnanediol glucuronide and estriol glucuronide are spectrophotometric standards.

Sink-or-Float: Mineralogists have a new series of "heavy liquids" for determining the specific gravity of substances by the sink-or-float method. R. P. Cargille (New York) produces the materials, which cover a specific gravity range up to 7.5. In addition to use in determining the specific gravity of minerals and gems, they can serve as a test for homogeneity and air pockets in the lighter alloys, and to indicate the quantity or type of filler in plastics.

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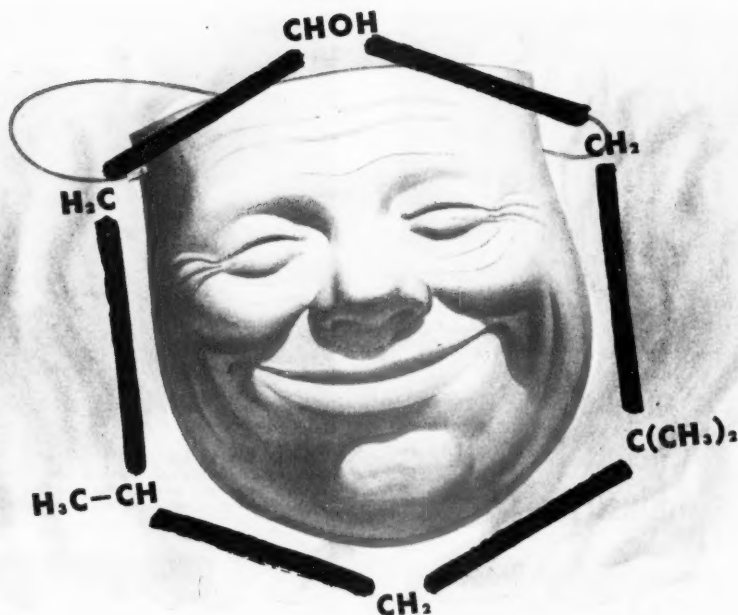
October 6, 1951



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Judge this chemical for yourself. Call or write the nearest CARBIDE office for a sample of Trimethyl Cyclohexanol. Put it through your own tests and determine its usefulness to you. Additional technical assistance is available when you need it.

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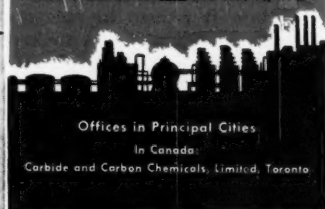
Trimethyl Cyclohexanol is only one of several higher alcohols produced by CARBIDE. Trimethyl nonyl alcohol and 2-butyl octanol, both 12-carbon alcohols, should be of interest to you as intermediates for rubber chemicals, lubricant additives, and surface-active agents. All three of these higher alcohols are available now in commercial quantities.

Physical Properties

	Low-Melting Isomer	High-Melting Isomer
Specific Gravity	0.8778 at 40/20°C.	0.8643 at 60/20°C.
Boiling Point, 760 mm. Hg	197.6°C.	189.2°C.
Vapor Pressure	0.1 mm. Hg at 40°C.	0.5 mm. Hg at 20°C.
Freezing Point	37°C.	55.8°C.
Absolute Viscosity	16.11 cps. at 40°C.	5.4 cps. at 60°C.
Solubility in Water at 20°C.	0.17% by wt.	0.11% by wt.

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PRODUCTION . .

Spotlight on Zirconium

Like titanium, zirconium metal has properties that make it a superior material of construction.

It is resistant to both acids and bases, immune to salt water. But it is heavier, presently more expensive than titanium.

Biggest market now is as a "getter" for electronic tubes, but it could find its way into process equipment.

Within the next few months, design engineers and production men will be digesting a lot of additional information on zirconium metal. National Lead's TAM (Titanium Alloys Manufacturing) Division is currently putting together information, will soon distribute it to would-be customers. And researchers from Foote Minerals will author articles for scientific journals, one to be published in November, another in December.

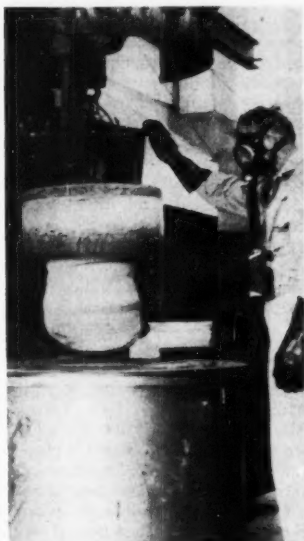
Close Kin: Much of the data on corrosion resistance and other properties will undoubtedly be impressive. Like its lighter-weight close kin, titanium, zirconium metal is strong, resists both acids and bases and is practically immune to salt water.

On the debit side, zirconium (like titanium) has a high melting point, but its performance at high temperatures is disappointing. On a weight basis, zirconium is about twice as expensive as titanium. And it is half again as heavy.

Infancy: Zirconium technology is still in its infancy. One expert says that it is now about five years behind titanium in development. Others think that to be an ultra-conservative stand. Their big argument: Much of the hard earned know-how on titanium can be translated into zirconium technique.

Furthermore, titanium producers—National Lead (through TAM), Du Pont, Metal Hydrides and Foote Minerals—loom as big factors in zirconium. TAM is producing sponge by the Kroll process (reduction of zirconium tetrachloride by molten magnesium), is currently figuring prices for fabricated forms. Du Pont is also producing by the Kroll process but the program is still in the research stage and the company is not selling any metal. Since Kroll titanium facilities can be converted—with minor alterations—to Kroll zirconium facilities, both companies are potentially the biggest producers.

Metal Hydrides, however, is presently the biggest maker. It turns out



KROLL PROCESS: Once only for zirconium, now also for zirconium.

50,000 lbs. a year of the powdered form, which sells for \$8/lb. The output is used in alloys, is also sold for photographic flash bulbs.

Foote produces a high purity, more expensive grade, using the process involving decomposition of zirconium tetraiodides on a hot filament. Foote also make a hafnium-free product.

Early this year Foote revealed that it was producing the metal for the Atomic Energy Commission. The AEC is interested in the metal because of its low affinity for neutrons. Since hafnium has a comparatively high neutron affinity, it must be removed.

Outlook: Aside from the powder for alloys, the largest present market for zirconium metal—about a ton a month—is as a "getter" in electronic tubes. Another potential application is in surgery—as a replacement for bone. It may supersede stainless steel for that purpose.

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PRODUCTION

has properties that would make it valuable. It will probably be superior to titanium in many aspects; and its current price tag could come down appreciably with more production. But for the immediate future, it will probably find limited applications in processes where shut-down time is expensive. For the long haul, it's anybody's guess.

"Tripled" Phosphate

In an experimental run Chemical Construction Corp. has shown that "triple" superphosphate fertilizer can be produced in present Broadfield Process equipment, normally used to make ordinary superphosphate. The run was completed last week at the plant of the Meridian Fertilizer Factory, Hattiesburg, Miss.

With the government crying for upped production of the triple superphosphate, the experiments were watched by representatives of most major phosphate producers. While not a new process, triple superphosphate is not normally produced in Broadfield equipment. The success of the experiment adds a new technique to Broadfield use, and increases the flexibility of present plants equipped with Broadfield "dens."

More Production: What this adds up to is more high-concentration phosphate fertilizer with no expansion of plants involved. Triple superphosphate tests as high as 48% phosphorous pentoxide, as against normal superphosphate's 20%.

Whether the experiments will result in wide adoption of the method remains to be seen, but there is little doubt that phosphate manufacturers are carefully looking over the test-run results.

Without Mining

The problem of exploiting the oil sands of Alberta, believed by many geologists to be the world's greatest known oil reserve, developed a new twist recently. An American, E. M. Davis, has come up with a modification of the Ljungstrom process that he claims will eventually produce oil from the sand beds at a cost of 70¢ a barrel.

Up until now experts have held that the best method of utilizing the beds is to mine the sand and develop plants to extract the oil. Now Davis says his process can work the deposits right in the ground—literally distill off the oil right from the sand beds themselves.

Like This: Davis' plan is to place metal pipe electrical heaters in the

sands to a depth of 50 feet at intervals of 30 feet over a large circular area of the sands. As in the Ljungstrom process, the electrodes would be charged and the subsoil area heated. But instead of continuing the electrical heating, Davis claims that the heat will force pores and tunnels through the mass, into which air or natural gas would be forced to give continued combustion without electrical heat. With the subsoil temperature at 1,000 F, the partially cracked oil would come to the surface and be recovered.

With electrical heat alone the cost would be prohibitive; but with sustained underground combustion, the cost, Davis feels, could be lowered to a reasonable level.

EQUIPMENT

Automatic Emulsifier: Hercules Powder Co., pioneers in automatic emulsification of rosin size, have brought out a new, and simplified, emulsifier. Requiring a space of only 6 feet by 6 feet, the new unit will handle up to 30,000 lbs. of 80% solids size in 24 hours.

The automatic unit consists of the assembled heating tank, size pump, water pump, temperature controls, water heater, cold water feed tank, and all electrical equipment necessary.

Reducer Fitting: A new reducer fitting, designed to permit the joining of different sizes of tubing, is being marketed by the Crawford Fitting Co. Called the Swagelock reducer, it consists of a body, two ferrules, and a nut.

With the new reducer it is not necessary to perform any preparatory steps on the tubing. It is merely assembled with a wrench. When assembled, the whole unit is torque-free and leakproof.

Steam Costs: Cleaver-Brooks Co. has developed a "slide rule" type calculator for ready computation of steam costs. With this pocket-size rule, comparative steam costs per thousand pounds, using coal, gas or oil, can speedily be determined with due allowance for fuel price variations.

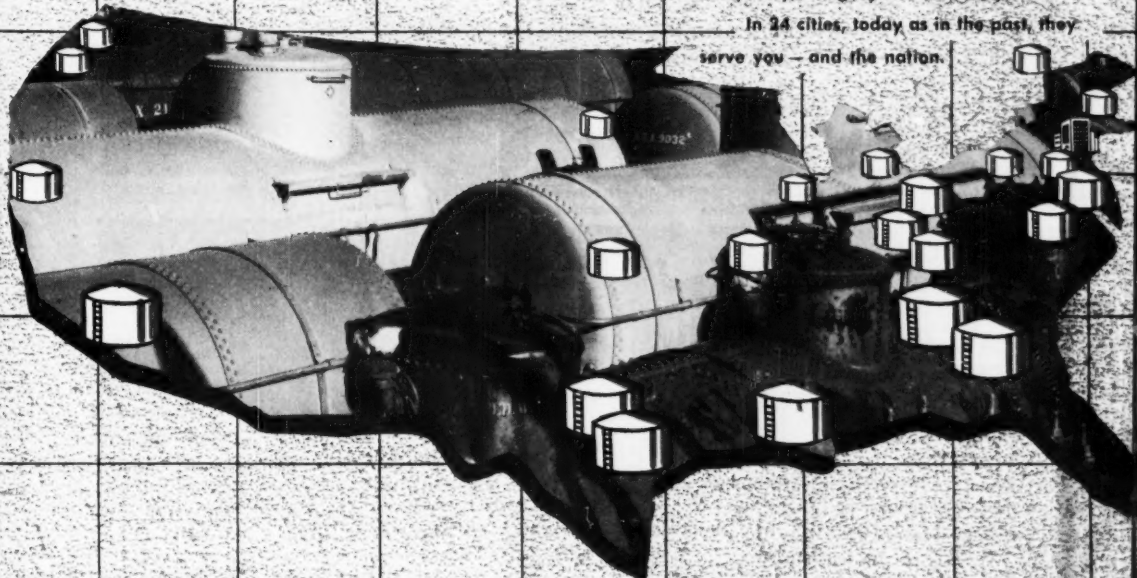
Entrainment Separator: Low cost removal of destructive entrainment from vapor lines is claimed for a new receiver-type purifier. Developed by V. D. Anderson Co., the new unit has no moving parts and has a self-cleaning action which greatly reduces maintenance cost. It is so designed that vapors can be handled at extremely high velocities with high efficiency and a minimum pressure drop.

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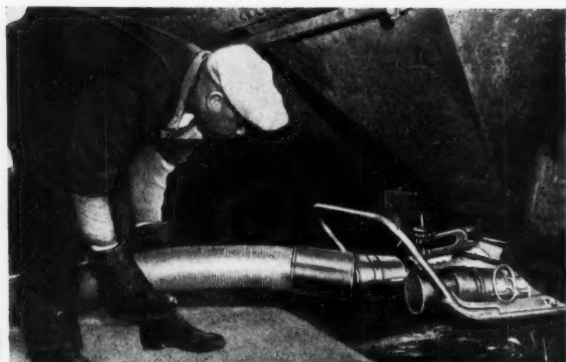
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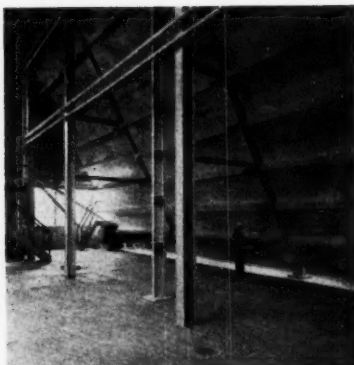
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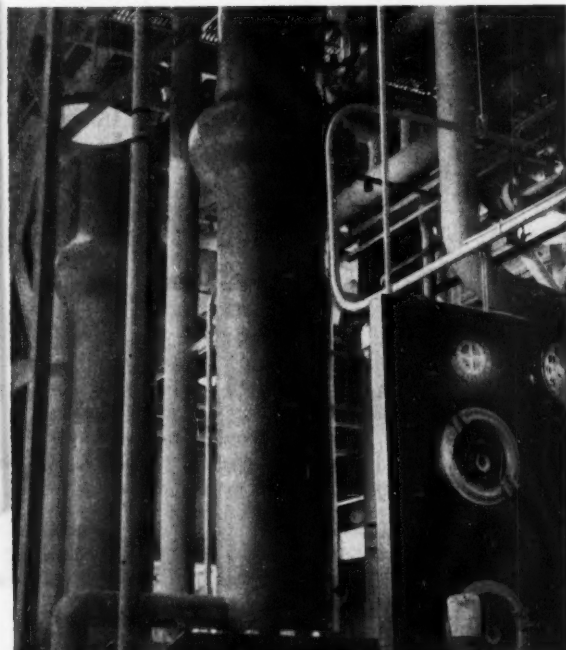
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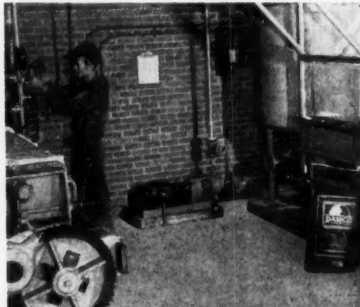
CORN SUGAR arrives at the plant in gondola cars and is moved by air conveyor to storage. Hydrogen is prepared from coke, steam and iron.



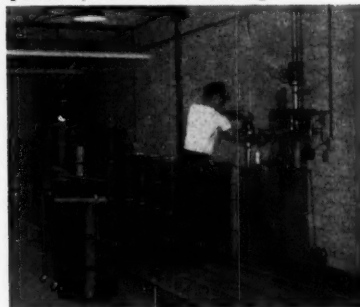
BEFORE PROCESSING, the sugar is stored in huge silos.



AFTER SOLUTION of the dextrose in water the sugar meets the hydrogen in the presence of a nickel catalyst and sorbitol is formed.



AFTER HYDROGENATION the sorbitol is purified by Darco and ion exchange.



MOST FINAL PRODUCT is 70% solution; is shipped in either drums or tank cars.

Sorbitol—Doubled and Redoubled

Long-time spadework by Atlas Powder Co. in the development of both manufacturing processes and uses for sorbitol will start to pay off in a much bigger way next month. Its fourth unit will then begin to operate at Atlas Point, Del. This will be the second time that Atlas has doubled sorbitol production capacity since the start of the Korean War.

Principal "why" in such a rapid

expansion is price stability. And the reason for this stability is an extremely simple process based on a relatively inexhaustible supply of low-cost raw material: corn sugar.

Electricity First: First commercial production of sorbitol utilized an electrolytic reduction process.

But nickel-catalyzed hydrogenation is now employed. After filtering out catalyst, ion exchange and activated

carbon purification are used before removal of excess water by evaporation. And no alloy steels are needed for erection of a plant.

Increasing quantities of sorbitol will be found in nearly all places that a polyol is used, either as a chemical reactant or because of its humectant properties. Most rapidly growing use, according to Atlas, is in the manufacture of alkyl resins.

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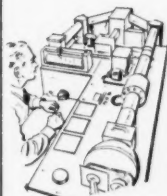
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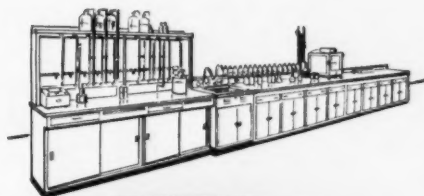
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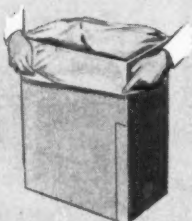
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PACKAGING

Neither Tin nor Steel

Chemical men who rely heavily on tin cans for packaging are concluding that, from some aspects, this is the best of all possible worlds. NPA's decision to allocate a big bundle of steel to can fabricators (CW, Sept. 8) was followed by the discovery of a tin substitute by Reynolds Metals Co. To add to their cup of cheer, packagers can look forward to news of similar developments by can manufacturers.

Reynolds new container requires neither tin nor steel. It is made of aluminum foil coated with plastic. The product to be packaged will determine which plastic; Vice President J. Louis Reynolds says that both polyethylene and vinyl plastics will be used.

Costwise, the new containers will be competitive with conventional tin cans. Reynolds reports that in some cases, they may be cheaper.

Ends of the can will look like conventional tin cans but will be made of the same material as the walls. Reynolds adds that the containers can be made as tough and durable as desired by adjusting the foil-to-plastic ratio.

A construction unit, being built in Richmond, Va., is expected to start operations within a few months. First machine to be installed will have a capacity of 60 to 100 cans a minute.

Out of the Pan: Principal significance of the new containers is that they will go a long way toward relieving our reliance on tin from Bolivia and Malaya. Although it has been the scarcity of steel rather than tin that was the bottleneck for can makers, tin supplies could conceivably be cut off at any time.

Acutely aware of this, the tin can industry has been conserving tin for



REYNOLDS: A curable shortage instead of a critical metal.

some time. An indication of the progress that has been made: In 1941, the industry used 41,000 gross tons to make 25 billion cans; in 1950, 31,000 tons for 33 billion cans.

American Can Co. started its tin conservation program (Operation Survival) in 1949. In February of this year, it issued a report showing it had (1) a tinless can, requiring small amounts of tin in the solder, in the pilot stage; (2) a can with tin-free solder; and (3) a tinless can using plastic instead of solder for cement.

Continental Can also has a program for conserving tin, will issue a progress report within the week.

Into the Fire? Nobody can dispute the fact that it is desirable to find a substitute for tin in can making. However, some would question the advisability of substituting aluminum and plastics, both in short supply. Reynolds recognizes this but points out that there is no raw material shortage for either in this country, and that any present shortage is "curable."

In any event, the new containers mean that canners will have another source of supply. Although the Armed Forces will get first call on the cans, all stand to benefit since the added capacity will take some of the load off tin can producers.

For the future, the cans will be a big factor in reducing our dependence on distant countries for a strategic metal. And coupled with developments by the tin can industry, it adds up to the rosier picture for can users at any time since Korea.

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Methyl Ethyl Ketone
Ethyl Ether
Isopropyl Ether
Diisobutylene
Polypropylenes
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October 6, 1951



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Ethylene Trithiocarbonate
Parathion
Rochelle Salt
Silicon Tetrachloride
Sodium Hydrosulphide
Sulphur Chloride
Sulphuric Acid
Tartar Emet
Tartaric Acid
Toxaphene
Textile Stripper
Titanium Tetrachloride

SPECIALTIES . .



DRUGS AND COSMETICS: For fair trade, the legal and political arenas.

Fair Trade Fracas

Preliminary hearings on trial to determine status of "fair trade legend invoices" used by drug wholesalers begins this month.

Justice Department is investigating both the drug and cosmetic industries, presumably to uncover antitrust law violations in fair trade activity.

Meanwhile fair trade advocates are marshalling supporters in legislative "in-between-season" to push for new fair trade law in the next Congressional session.

The price wars following the Supreme Court decision virtually killing "fair trade" (CW, June 2) are no longer hot enough to excite consumer interest or warrant newspaper space. But the two industries—drug and cosmetics—most concerned with setting minimum resale prices for their trade-marked products are as actively engaged in legal and political battle as they were when the "non-signer" provisions of state fair trade statutes—which made the system work—went down the drain in the Schwegman case.

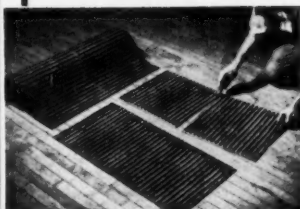
This month the drug industry, for one, hoped to see clarified the status of what it thinks is an effective and practical method of preventing price cutting in fair trade states: the fair trade legend invoice.

Under this plan, originated by McKesson & Robbins, contracts are made with distributors requiring them to agree not to resell products to retailers at less than fair trade prices in states having fair trade laws; and

requiring them to negotiate contracts with retailers prohibiting resale to consumers at less than the established minimum price. Each invoice, then, was expected to constitute a legal contract in fair trade states, and many drug wholesalers, when requested by manufacturers, have been using such invoices to force retailers to honor established minimum prices.

Test Decision: The test case to determine the validity of such invoices as contracts is to be tried in New Jersey, a fair trade state, and involves McKesson & Robbins and Johnson & Johnson and a retailer, Charmley Drug Co., of Newark. Charmley ordered items from McK&R, acting in New York as a wholesaler for J&J products made in New Jersey, and other items from McK&R acting in New Jersey as a wholesaler for New York-made J&J products; and then declared it would not honor the fair trade legend on the invoice which McK&R was using at J&J's request. Actually two suits are involved be-

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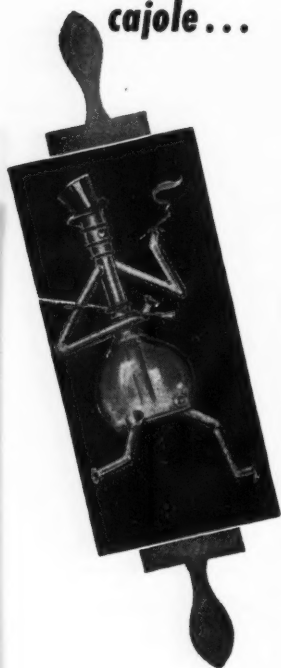
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SPECIALTIES

cause of the "double" interstate nature of the transactions.

Both McK&R and J&J filed suit against Charmley last summer, and final hearings were scheduled to begin last week. However, as is often the case with such suits, the date has been set back, and a "pre-trial" procedure will reopen this phase of the legal battle Oct. 23. Joe Stamler, lawyer for the drug houses, says the case may go to the Supreme Court.

Receiving End: While fair trade advocates are on the offensive in this case, the shoe is on the other foot in Department of Justice investigations of druggists in the Pittsburgh area and of the cosmetic industry (including perfumes and toilet waters) in New York. Justice says its aim is to find violations of antitrust laws.

But the Pittsburgh drug trade feels that the investigation was touched off by a meeting of an "informal group of druggists and distributors" to discuss the Pennsylvania fair trade law after the Schwegman decision. Only those at this gathering last summer appear to have been questioned thus far, but the investigation is continuing.

An official of the 20-year-old Allegheny Retail Druggists Association helped get the group together, but says he was not acting as an association official. Justice evidently is looking for evidence of collusion though those being questioned disclaim knowledge of the Department's purposes.

Justice Department officials handling the New York investigation of the cosmetic industry won't comment on it other than to confirm it is taking place. Presumably, however, they not only are looking for fair trade pressure in violation of the law as amended by the Schwegman case, but also are eyeing: tie-ups between perfume houses and their foreign affiliates; domestic relationships existing between various perfume companies; and connections between them and big customers, large retailers and trade associations. Records back to January 1950 have been subpoenaed, are now being sifted for evidence.

Fighting Back: The industries now under fire are not just lying back waiting to see what Justice will do. They are organizing to get back what they feel is essential to maintenance of trade-marked merchandise of high quality—fair trade pricing on a national basis.

Both the Bureau of Education on Fair Trade—the "educational arm" of the National Association of Retail Druggists—and the American Fair Trade Council—an organization of non-drug manufacturers interested in

fair trade—are joining in an effort to promote legislation restoring fair trade. A national push is in the offing; state activity is under way.

Prospects of a new law soon are not bright; they will be dimmer if a few antitrust indictments are handed down as a result of current investigations.

Soap a Cosmetic?

Congress is again giving attention to the question of whether soap is a cosmetic, will soon conduct committee hearings on bills that would put soap and detergents under the same regulation as cosmetics.

Soap is not covered by the Food, Drug & Cosmetic Act and the Regulations of the Food and Drug Administration applying to such products as lipstick, powder and other beau-



SOAP AND DETERGENTS: Public health or public office?

tifiers. That's because it has always eluded legal definition as a cosmetic.

Purpose of such regulations is, of course, to prevent use of harmful materials in intimate contact with the skin. But soap contacts the skin too—and all of it. Yet soapmakers have for years been successful in opposing extension of the law to include soap.

The powerful farm bloc in Congress, however, is a force that may be too tough to handle this time. The farmer's interest is prompted by his pocketbook, not by concern for public health. For synthetic detergents have been cutting into soap sales, and this in turn has hurt the market for farmer-produced cottonseed, soybean and other oils and fats used for soap.

Per capita consumption of soap has dropped from 30 lb. to 22 lb. a year in the past ten years. Detergents, on the

Jefferson Ethylene Oxide

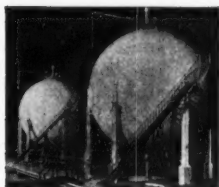
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These are only a few of the many fields where ethylene oxide is a useful raw material. Such widespread use rests on the ability of ethylene oxide to enter into countless reactions. For example, this chemical will react with...

- Organic acids to form glycol esters
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- Mercaptans to form thioglycols and ethers
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★ National defense requirements have created emergency demands for Jefferson chemicals. Although our facilities are being expanded as rapidly as possible to cope with these requirements, many of our chemicals are currently in short supply. We nevertheless welcome your inquiries and will make every effort to serve you.

Pressure spheres store ethylene oxide at the Jefferson plant at Port Neches, Texas.

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Briefs

From recent literature

Antimony trichloride and similar compounds react with ethylene oxide to give haloethyl derivatives which may be utilized in the preparation of protective coatings, impregnants, adhesives, binders, and fungicides.

Non-glutinous starch (e.g. corn starch) is modified so as to resemble closely glutinous starch by reacting the granular starch under pressure with about 5% by weight of ethylene oxide. The granular structure is not affected, the product will form a cohesive paste when cooked with water and retrograding tendencies are greatly reduced. These are properties which have been found useful for producing veneer glues, paper sizing and coatings, fabric finishing materials, textile printing pastes, and adhesives.

Desulfurization of hydrocarbons is accomplished by contacting the hydrocarbon with ethylene oxide at 150-250°F and separating the resulting hydroxythioethers by distillation.

Creaming rate and cream solids concentration of formaldehyde-treated, chemically creamed natural rubber latex is considerably increased by the further addition to the latex of a non-ionic surface active agent. The surface active agent is formed by reaction of ethylene oxide with a fatty alcohol, fatty acid, or alkyl phenol.

Sterilization of plaster bandages by treating the bandages overnight with ethylene oxide at 37°C proved satisfactory. Wet and dry heat were found unsatisfactory.

These developments are abstracted from recent publications or U. S. patents. They may suggest applications of Jefferson Ethylene Oxide in your products or processes.



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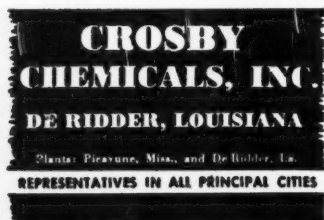
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SPECIALTIES

other hand, from a slow start have jumped from 5 lb. to 8 lb. per capita between 1949 and 1950.

Loud Spokesman: Certainly as constituent-loving as any other member of Congress, Iowa's Senator Guy M. Gillette has pounded these facts home in the farm belt. And coming up for hearing soon by a Senate Labor Subcommittee on Health are bills sponsored by him to put both soap and synthetic detergents under FDA Regulations.

This legislation likewise would require that the ingredients of all cosmetics be listed on the label. The Food, Drug & Cosmetic Act now governs the nature of ingredients used in cosmetics but it doesn't require the manufacturer to list them on the container like, for example, candy manufacturers have to do.

Senator's Gillette's object is to discourage the use of detergents, both by Government restrictions and public disfavor. Some detergents have an irritating effect on some people's skin. Given the authority, FDA people would tackle this angle. Labeling of detergents would disclose their chemical ingredients, which are unfamiliar to most people and, therefore, would likely give rise to doubts regarding their use.

Short Respite: Production of detergents has continued to increase this year, but at a slower rate. And use of fats and oils in soap has turned up some since the Korean outbreak.

Reason for this is that more and more benzene, necessary for manufacturing leading types of synthetic detergents—alkyl aryl sulfonates have the big share of the household detergent market—is being diverted to such defense needs as synthetic rubber, nylon and aviation gasoline. The Senate Labor Subcommittee on Health, however, is looking ahead to the time when detergents again are free to compete for the soap market against natural fats and oils.

Fabric Rejuvenator

Fab-Spray, a simple, easy to use fabric rejuvenator, soon will be available from coast-to-coast. Test marketed through California automotive supply jobbers since early this year, this fast-drying, plastic-base, mineral pigment spray is currently seeking expanded outlets in other areas of the country. Henderize, Inc., Sacramento manufacturer and distributor of patented products, controls the patent and distributes Fab-Spray under an exclusive marketing agreement with Pabco, the manufacturer.

Originally developed in 1941, Fab-

Spray was picked up again after World War II and perfected steadily ever since. Neither a dye nor a tint, the spray penetrates the fabric rather than coating it; it brightens, colors, and protects fabrics without changing their original texture. Any car owner using a standard spray gun with 12-15 lb. pressure can apply it to seats, headlinings, door panels, floor coverings, and convertible tops. Available in ten basic colors that can be inter-mixed, and in pint, quart and gallon sizes, one quart (\$2.25) will complete the average sedan. No cleaning or preparation of the surface is required.

Although presently limited to the automotive trade, Fab-Spray has been used successfully on airplane interiors and for revitalizing a heavy 19,000 sq. ft. canvas used in decorating the Horse Show Arena at the recent California State Fair. The canvas had been used outdoors for five years. Coverage secured in this particular application was 543 sq. ft. per gal. (at \$8 per gal). Indications are that Fab-Spray may find wide usage in industrial and commercial buildings and for all household furnishings.

Wood Preserving Plant: The newly-formed Brice Wood Preserving Corp. expects to have its \$85,000 wood preserving plant, now under construction at Archer, Fla., in operation by the first of the year. It's believed to be the South's first to use the vapor drying and solvent recovery process, will treat the timber of the Brice Lumber Co. Copper naphthenate is the active ingredient with which the lumber is impregnated to render it termite- and rot-proof, and usable under water.

Lee Expansion: Lee Oil and Chemical is building a new 4,000 sq. ft. plant at Tuckahoe, N. Y. Reason: expanding business (core oil) and plans to add new products to its line. The company's marketing area is New England.

Synthetic Wax: Aquawax is the name of the latest synthetic wax developed by Concord Chemical Co. (Moorestown, N.J.) as a replacement for an imported wax—in this case Japan wax. Main feature in addition to its cost (currently 40¢/lb.), is its self-emulsification. It is claimed to cut costs and save time in making plastic starches, finishing textiles, leather, paper, etc.

Latex Paint: Truscon Laboratories (Detroit) has just introduced a rubber-base wall coating under its Paratex

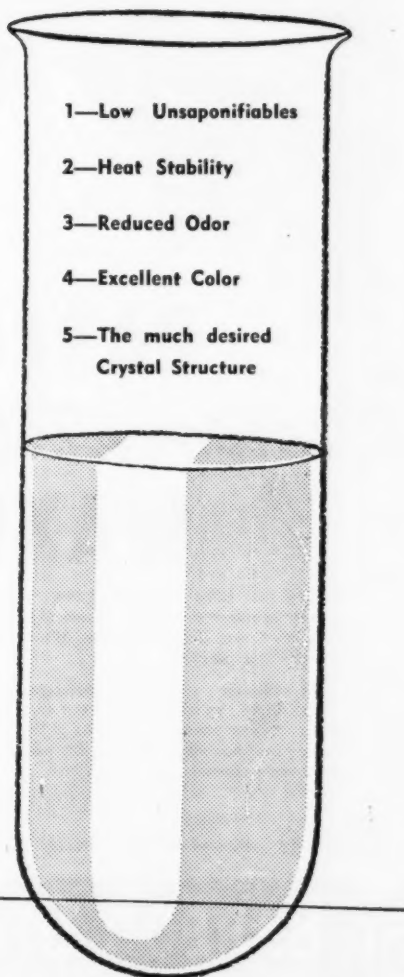
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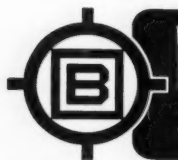


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George, the camel, shown above, was born with superior resistance to heat. But some of the high melting points of Bareco Microcrystalline Waxes would even make George perspire.

If your company's produce or packages are going to have to "beat the heat" you owe it to yourself to test the outstanding protective qualities of these fine waxes. Detailed specifications and price lists will gladly be sent to you upon request.

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SPECIALTIES

trade name. Available in a variety of colors in 5-gal., 1-gal. and 1-qt. sizes it is claimed to cover with one coat, have all the virtues of the new latex products.

Moth Aerosol: Specifically formulated for quick action on moths, Speed Spray Moth Mist (Wy-To Chemicals, Inc., Chicago) has completed test-marketing in Chicago, will soon appear in Milwaukee and other Midwest cities.

The spray can be used without staining on clothing, furniture and in closets, sells in hardware and paint stores at \$1.39 per 12 oz. bomb. Formulation is 2% orthohydroxybenzoyl p-chloranilide oleate (tech.), 2% para-chlorobenzene, 46% petroleum hydrocarbon, 50% Freon-12 propellant.

The new product rounds out Wy-To's aerosol line, lining up with Spray Mist Room Deodorant and Hy-Power Insect Spray.

BOOKS

Phase Transformations in Solids, editorial chairman: R. Smoluchowski. John Wiley & Sons, Inc., New York, N.Y.; x+660 pp., \$9.50.

Consisting of various papers presented at the Cornell Symposium plus the discussion of these papers, this volume centers its attention on the fundamental phenomenon of phase change. The view taken in the writing of this book is that an understanding of the phase transformations in solids could be best achieved by integrating the ideas of physicists, chemists, metallurgists, ceramists, and others. The subject material is sectioned off so that the first six chapters deal with theoretical considerations, the next five chapters with non-metals and the last five with metals. Each paper is a complete unit and independent of the others.

Corrosion Causes and Prevention, third edition by Frank N. Speller. McGraw-Hill Book Co., New York, N.Y., xiii+686 pp., \$10.

Here is a reference book covering the various aspects of the corrosion question, written in a non-technical manner and intended as a handbook for engineers and architects in solving specific corrosion problems. With a view to linking corrosion-prevention work with the conservation of metals, the author presents his subject matter with particular reference to the ferrous metals. In addition to explaining the nature of corrosion, the prevailing kinds, the factors of their nature and occurrence, and prevention work, this third edi-

PRODUCT CONTROL THROUGH INFRARED ANALYSIS

Number 2 of a Series of Data Sheets for Better Process Control from The Perkin-Elmer Corporation, Norwalk, Conn., Manufacturers of Infrared Spectrometers, Flame Photometers and Electro-optical Instruments.

PROBLEM:

Rapid, accurate determination of small amounts of water in Freon refrigerants.

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SOLUTION:

Infrared Analysis. Sample compressed in 4-inch pressure gas cell. Infrared analysis carried out at 2.67-micron band (water vapor absorption region). Measured optical density converted to water concentration in parts per million by graph, Fig. 1.

INSTRUMENTATION:

Commercial infrared spectrometer, rock salt optics, 4-inch pressure gas cell.

DISCUSSION:

Moisture in refrigerants may plug expansion valves or capillary tubes by ice, corrode metal parts, copper plate bearings or (other) rubber surfaces. Critical level for water concentration is 10 p.p.m.

Classical Analytical Procedure - Phosphorous pentoxide method - accurate to only 2 p.p.m., 4 hours per determination.

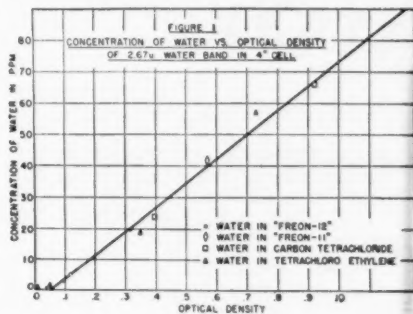
Infrared Spectrometer Analysis - accurate to 1 p.p.m. in 0-10 p.p.m. range, 5 minutes per determination.

REFERENCE:

- (1) *Anal. Chem.*, 19, 11, 1947 (procedure)
- (2) *Instrument News* 2, 1, 5 (instrumentation)

CONCLUSIONS:

Method may be applied to other liquids and gases.



Infrared Spectra of Water in Carbon Tetrachloride. Shows 2.67-micron water band.

Figures from Reference (1).

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BOOKS

tion contains new sections on the subjects of biological influence and cathodic protection.

Briefly Listed

FRENCH BIBLIOGRAPHICAL DIGEST, 72-p. issue #8 listing the most important books on chemistry published in France between 1940 and 1948, including additional works published in the French language by Belgian and Swiss scientists. All volumes noted are at least college level. The Cultural Div. of the French Embassy, 934 Fifth Ave., New York, N.Y., free upon request.

PAYMENT BY RESULTS, 204-page report outlining the general principles, procedures utilized, application, and advantages and disadvantages of various systems of payment by result—whereby earnings are directly linked to output. Also made note of are provisions found necessary in such a system in order to safeguard the interests of both workers and employers. Published by The International Labor Office in Geneva with the Washington Branch at 1825 Jefferson Place, N.W., Washington 6, D.C., \$1.25.

A SURVEY OF ECONOMIC EDUCATION, by C. W. McKee and H. G. Moulton, 63-page study defining economic education as helping people understand factors which produce higher standards of living, discusses the extent and character of economic educational work being conducted in secondary schools, private business schools, colleges and universities, special agencies and special interest groups. The Brookings Institution, Washington 6, D.C., 50c.

MEETINGS . .

Amer. Oil Chemists' Soc., fall meeting, Edgewater Beach Hotel, Chicago, Ill., October 8-10.

Natl. Safety Council, congress & exposition, Stevens Hotel, Chicago, Ill., October 8-12.

Electrochemical Soc., annual meeting, Hotel Statler, Detroit, Mich., October 9-12.

Synthetic Org. Chem. Mfrs. Assn., Commodore Hotel, New York, N.Y., October 10.

Amer. Tung Oil Assn., Buena Vista Hotel, Biloxi, Miss., October 11-12.

Boston Conf. on Distribution, Statler Hotel, Boston, Mass., October 15-16.

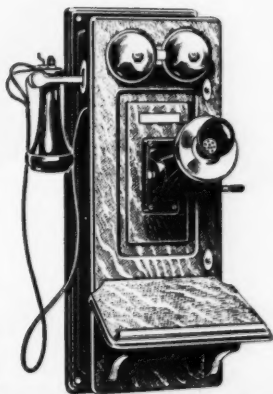
Amer. Gas Assn., annual convention, Kiel Auditorium, St. Louis, October 15-17.

Amer. Assn. of Textile Chemists & Colorists, annual meeting, Statler Hotel, New York, N.Y., October 17-19.

Inst. of Gas Technol., annual meeting, Chicago, Ill., October 18.

Southwide Chem. Conf., Wilson Dam, Ala., October 18-20.

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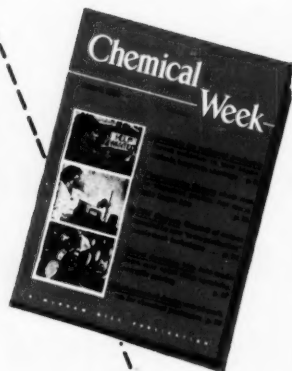
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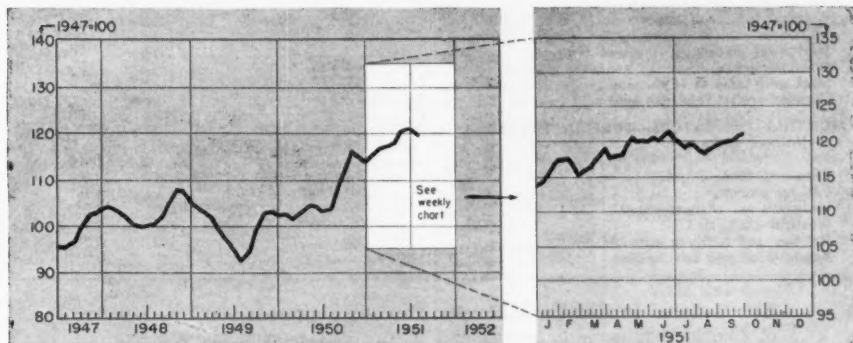
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Chemical Week

CHEMICAL MARKETS....



CW Index of Chemical Output—Basis: Total Man-Hours Worked in Selected Chemical Industries

Supply improvement is the prevalent chemical market note this week. The CW production has now regained its record peak of this spring. But the current demand is sustained mostly by defense business. Calls for chemicals by civilian industry have been somewhat disappointing, especially from textiles, paint, and leather manufacturers and processors.

The plastics fabrication business has improved, but here again, defense, not civilian industry provides the major stimulus in keeping producers busy. At the moment, lack of buyers' interest at the retail level has put a damper on pre-season enthusiasm.

But molders still have to pay a premium for a few plastics in the resale market, if they must get them there. Note of cheer: nowadays a spot buyer pays 60-70¢ a pound for polyethylene at resale; last spring he paid \$1.25 and more.

Ethyl cellulose shows signs of becoming more accessible to the civilian market, despite strong military demand. Reason: more abundant polystyrene is reputed to be supplementing these supplies for classified military needs.

A longer-term outlook gives plastics people further cause for betting on ethyl cellulose to make a civilian come-back. Major producers of ethyl chloride, the forerunner of ethyl cellulose, are in the midst of a considerable boost in output. The latest: Shell Chemical Corp. this week embarked on expansion of its Pasadena, Texas, facilities that will just about double its present day output.

Besides ethyl cellulose, the other big use for ethyl chloride is in tetraethyl lead manufacture. Both Du Pont and Ethyl Corp., titans in TEL production, have ambitious programs to make at least 20% more. Only obstacle: The Petroleum Administration for Defense, concerned about the lead shortage, has moved to slash TEL lead allotments nearly 50%.

More caustic-chlorine expansion brings back another metal, mercury, into the market spotlight. Prices in New York for the standard 76 lb. flask are now \$218, about \$12 more than two weeks ago. The price hike is compounded partly on speculation. But mostly the increase is due to the whopping new production of caustic and chlorine in mercury cells.

MARKET LETTER

MARKET LETTER

WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
Chemical Industries Output Index (1947 = 100).....	121.9	121.5	115.8
Bituminous coal production (daily average, 1000 tons).....	1,817.0	1,810.0	1,922.0
Steel ingot production (thousand tons).....	2,051.0	2,041.0	1,942.0
Wholesale prices—chemicals and allied products (1926 = 100).....	141.1	140.4	129.9
Stock price index of 14 chemical companies (Standard & Poor's Corp.).....	252.2	256.5	191.4
Chemical process industries construction awards (Eng. News-Record).....	\$95,152,000	\$7,812,000	\$12,719,000

MONTHLY INDICATORS—FOREIGN TRADE

(Million Dollars)	EXPORTS			IMPORTS		
	Latest Month	Preceding Month	Year Ago	Latest Month	Preceding Month	Year Ago
Chemicals, total.....	89.3	93.0	53.4	21.9	24.7	7.5
Coal tar products.....	6.8	7.4	3.9	4.8	4.2	1.6
Medicinals and pharmaceuticals.....	26.3	27.4	15.5	1.1	0.9	0.4
Industrial chemicals.....	17.3	17.5	7.6	8.6	9.7	2.9
Fertilizer and fertilizer materials.....	4.3	4.5	6.0	6.4	8.7	2.2
Vegetable oils and fats, inedible.....	10.5	12.7	3.9	7.0	9.9	6.4

The National Production Authority Estimate: Another 600 tons per day of chlorine will come in from new U.S. facilities next January.

A bigger chlorine supply means a turnabout in the supply picture of DDT and benzene hexachloride (BHC). These insecticides had been on the critically scarce list earlier this year because of lack of chlorine.

But now that scarcity has eased. Next year's output of BHC, for instance, is due to reach 160 million pounds, but domestic demand will not likely surpass 130 million. DDT production, estimated at 105 million pounds for the oncoming year, will be some 10% beyond home needs.

Aware of the supply trend, the Office of International Trade will liberalize export restrictions on these pesticides. A large share (15%) will be channeled through the Economic Cooperation Administration. When U.S. demand picks up early next year, these exports will be cut back.

ECA would also like to ship out greater quantities of fertilizer. But Secretary Brannan of the U.S. Department of Agriculture is opposed. He pointed out this week that the U.S. itself will face a scarcity of superphosphate, brought about by the sulfuric acid shortage.

Despite the dearth of sulfuric, a major producer of alkyl aryl sulfonate detergents will boost alkyl benzene capacity to 300 million pounds annually. A goodly share of this alkane will be sold for sulfonation by the converter—if he can get the needed acid.

One detergent not requiring sulfuric, an Igepal non-ionic, is now 5¢ a pound less. The producer: Antara Products Division of General Dye-stuff Corp. With this price reduction and the a-building \$2.5 million expansion at Doe Run, Ky., Antara thereby seeks to snare a bigger market for non-ionics.

Antibiotics continue the trend to lower prices and larger volume. This week has witnessed a trio of price reductions, resulting from the economies of volume production and the competition for new customers. Chas. Pfizer & Co., Inc., lowered terramycin prices, 15% for the oral form and 40% for the intravenous. Parke, Davis & Co. brought down prices of chloromycetin by 15% for the oral variety, 10% for the externally-applied. Lederle Laboratories Division of American Cyanamid, producers of aureomycin, reduced the cost of the intravenous type by 40%, capsules by 15%, and other forms by 10%.

Eastern and Midwest borax consumers are expected to benefit most from the new commercial grade, Borax 5 Mol, made by the Pacific Coast Borax Co., a division of Borax Consolidated, Ltd. This product has 16-17% less water, which means sizable freight savings on longer hauls from the West Coast.



FLUORSPAR RECOVERY: Two high-priority claimants await.

Won't Go Two Ways

Both fluorine chemicals and aluminum, rated high for defense, vie for acid-grade fluorspar. Prediction: Aluminum gets top billing.

More fluorspar output will be pushed by the Defense Minerals Administration to relieve the shortage.

Other prospects for more acid-grade fluorspar: more imports, and upgrading of ceramic-grade ore.

Someone will have to decide soon and something will have to give. That is the upshot of the shortage of acid-grade fluorspar. There isn't enough to go around now, and the lack will get worse next year. Both fluorine

chemicals and aluminum, top-rated in the defense program, will demand more of this strategic mineral as mobilization develops. How to choose between them will have to be decided by upper echelons of the National Production Authority.

Topped by Ingot: If a showdown does come, aluminum expansion will probably get the earlier nod for fluorspar. Growth of aluminum output for direct defense needs has already picked up considerable momentum. On the defense time-table, aluminum production is slated to hit some 2.2 billion pounds in 1952. This is a 25% boost over the 1.6 billion pounds that should be attained this year. Acid-grade fluorspar, needed for synthetic cryolite, averages about 8% of the alumina charged to the electrolytic aluminum cells.

At the conference this month on fluorspar supply, the National Production Authority estimated that an additional 1,000 tons will be needed each month for the next half-year, because of the aluminum expansion.

Keen Rival: These metal demands will slow the vigorous growth of



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CHEMICAL MARKETS

fluorine chemicals, but not for long. Derived from fluorspar via hydrogen fluoride, these versatile products have become indispensable to defense and also to civilian industry. Requirements of the high-purity fluorspar for chemicals are now around 125,000 tons annually, perhaps 10% more than the amount for aluminum production.

Hydrogen fluoride, the family head, goes directly into aviation gasoline manufacture as an alkylation catalyst. The aqueous solution is widely used in pickling of stainless steel. Among the chemical derivatives of HF, Freon fluorocarbons are made in biggest volume and still growing fast for uses in refrigerants and aerosol propellants. Fluorinated hydrocarbons find notable success by virtue of resistance to heat and chemical action, and for exceptional electrical insulation. Teflon, Kel-F, and fluorinated lubricants are typical and highly-prized examples.

More to Fore: In view of these vital needs, the Defense Minerals Administration is plumping hard for more fluorspar, and producers are doing

their utmost to provide it. Ozark-Mahoning and Zuni Milling Co. are prominent among producers for sale. Alcoa and General Chemical own captive mines, putting these companies in an enviable position if supplies are short.

Expansion of fluorspar facilities will get the tangible blessing of the National Production Authority with certificates of necessity and accelerated tax write-offs.

Other avenues to extend fluorspar supplies are slated for early exploring. Plans are under way to step up imports from Mexico, Newfoundland, and Spain. DMA will, if necessity demands, doubtless offer economic incentives to upgrade lower-purity fluorspar, especially ceramic grade. For long-term relief, work will be spurred to get more fluorides from phosphate rock to supplement fluorspar in the manufacture of commercial fluorine compounds.

In view of these prospects—if NPA can pacify the rival claimants for fluorspar in the year ahead—decisions thereafter will come easier.

GOVERNMENT NEEDS

Bid Closing Invitation No. Quantity Item
Chief Procurement Division, Supply Service, Veterans Administration, Washington 25, D.C.:

Oct. 9	A-19	8,064 btl. 600 cn. 125 drums 1,344 btl. 1,584 btl.	Ascorbic acid tablets Glycerin, 10 lb. can Glycerin, 50 lb. drum Glyceryl trinitrate tablets Hexavitamin capsules
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Navy Purchasing Office, 111 East 16th Street, N.Y.:

Oct. 9	9605	5,000 lb.	Sodium cyanide
Oct. 8	294B 295B 296B 298B 9575 9584	175,440 btl. 71,952 btl. 110,208 btl. 40,064 btl. 49,200 gal. 23,600 gal.	Drugs and chemicals Sulfadiazine tablets Drugs and chemicals Oleovitamin D Synthetic detergent cleaner Grease cleaning compound
Oct. 9	9601	270,000 lb.	Calcium chloride
Oct. 9	9547 9594 9546	47,450 gal. 4,000 lb. 122,000 lb.	Carbon tetrachloride Sodium stannate Scouring compound
Oct. 16	9590 9561	51,000 ea. 202,000 lb.	Calcium hypochlorite Oil and water absorbing compound

GOVERNMENT AWARDS

Item	Supplier	Location
Naval Supply Depot, Great Lakes, Ill.:		
Acids	Octagon Process, Inc.	Staten Island, N.Y.
Navy Bureau of Ordnance, Washington 25, D.C.:		
Stabilized red phosphorus	Kilgore, Inc.	Westerville, O.
Armed Services Med. Proc. Agency, Brooklyn 1, N.Y.:		
Developing powder	Mallinckrodt Chem. Works	St. Louis 7, Mo.
Penicillin	Eli Lilly & Co. J. T. Baker Chem. Co. Lederle Labs, Div. of Amer. Cyanamid Co. C.S.C. Pharm. Div. Com. Solvents	Indianapolis, Ind. Phillipsburg, N.J. New York, N.Y. New York, N.Y.
Sulfadiazine tablets	Harrison Products, Inc.	San Francisco, Calif.
X-Ray radiographic film	Gen. Aniline & Film Corp.	Binghamton, N.Y.
Oakland Quartermaster Procurement Agency, QM Purchasing Div., 124 Grand Ave., Oakland, Calif.:		
Rodenticide	Holmes-Hamilton Co. Hockwald Chem. Co. Colgate-Palmolive-Peet Co.	Oakland, Calif. San Francisco, Calif. Berkeley, Calif.
Soap, Toilet		
Armed Services Med. Proc. Agency, 84 Sands Street, Brooklyn 1, N.Y.:		
Codeine sulfate	Reckall Drug Co.	Boston, Mass.
Acetphenetidine	Plough, Inc.	Memphis, Tenn.
Alcohol	Publicker Industries, Inc.	Philadelphia, Pa.

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Receiver-Type Purifier	28D
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Steam Cost Calculator	28C

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Synthetic Lubricants	52A

EQUIPMENT	
Control Unit	52F
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Chemicals	
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Armo-o-fos (tripoly)	5d
Aromatic	36
Berez	38e
T42a	38e
Bicarbonate of soda	38e
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Expires January 6, 1952

BOOKLETS.....

Chemicals

Synthetic Lubricants

8-p. booklet listing the properties and advantages of synthetic lubricants having high-temperature applications in glass and ceramic manufacturing, explains how to use these synthetic lubricants in kiln car wheels, oven-chains and drives, hot flare cut-off and steam machines, etc. Carbide and Carbon Chemicals Co.

Ion-Exchange Materials

62-p. technical bulletin containing data, both in tabular form and text, on the physical properties, expansion, regeneration and capacity of "Super Nalcilite," a synthetic gel type zeolite for cation exchange, used in removing hardness from water often due to soluble calcium and magnesium salts. National Aluminum Corp.

Fine Organic Chemicals

32-p. price list noting sizes and prices of firm's line of purified organic chemicals, including several hundred which are gaining importance in the chemical world; data is included on available chemical gases, with additional information on packaging, grades, delivery, and purchasing agents presented in the foreword. The Matheson Co., Inc.

Equipment

Process Equipment

20-p. 1952 edition of firm's catalog reviewing the specifications, features, and applications of its processing equipment. After describing the facilities, techniques and scope of their fabricated plate services, the booklet discusses heat transfer equipment, steel storage tanks, automatic control equipment, vent valve-flame arrestors, safety heads and walkways and stairways. Black, Sivalis & Bryson, Inc.

Nickel and High Nickel Alloys

44-p. technical treatise on the subject of fusion welding of nickel and the high nickel alloys, covers the various forms of electric arc welding plus gas welding, welding instructions, the boiler code of the ASME, pickling, testing, inspection

safety methods and related topics. The International Nickel Co.

Control Unit

4-p. bulletin explaining the specifications, component features, diagram, and operation of electronic differential pressure indicating control unit, an electronic control system designed to indicate and control the differential pressure between a volume of hydrogen fluoride gas and a surrounding gas. The Henry G. Dietz Co.

Water Hammer in Piping Systems

8-p. bulletin discussing the cause, effect and control of water hammer in piping systems, indicating its potential damage to piping. Outlined are various tests made in studying its action, intensity, origin and control—including tests for determining the effects of check valves in overcoming the condition. The Williams Gauge Co.

Vacuum Breakers

Specification sheet describing the sizes, construction, operating pressure and relief capacity of vacuum breakers, devices used to protect tanks, boilers, reactors, stills, retorts and other closed vessels by automatically permitting air to enter the vessel whenever the vacuum exceeds safe limits. Minneapolis-Honeywell Regulator Co.

General

Visible Records

6-p. folder featuring new procedure for visual sales supervision by means of "Dexigraph Photocopies," photocopies which can be used by management in keeping sales effort properly directed and up-to-date, and by salesmen for having immediate data on their progress, instructions, etc. Remington Rand, Inc.

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Cover (bottom), pp. 22, 23, & 24—Amercynamid Co.; p. 13—Monsanto Chem. Co.; p. 16—Acme Photos.

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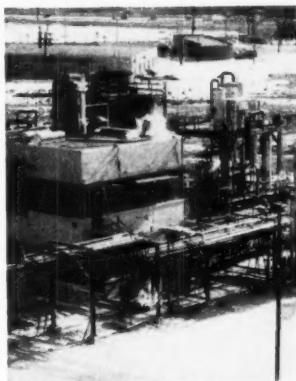
Another new product has been added to Armour's line of fatty acids. Already the manufacturer of the most complete line of high-purity distilled fatty acids that can be found anywhere, the Armour Chemical Division now offers low-temperature solvent crystallized oleic acid.

This exclusive process offers users of oleic acid a product that has advantages not found in ordinary distilled or pressed products. The extremely low temperatures employed guarantee a substantially lower saturated acid content than conventional types of oleic acid. In addition, solvent crystallized oleic acids are ester-free materials since the solvent used is not reactive with fatty acids. This new product is characterized by bland odor and has excellent heat stability.

Armour's low-titer White Oleic Acid meets U. S. Pharmacopoeia specifications and is recommended for those uses that require a light color as well as a low titer. For applications that require a low titer but not a very light color, low-titer Distilled Red Oil is recommended.

White Oleic Acid (Low Titer)

	<u>Min.</u>	<u>Max.</u>
Titer		5°C
Iodine No. (Wijs)	90	95
Acid Value	195	201
Saponification Value	195	201
Unsaponifiable	—	2%
Color (Lovibond 5 1/4" tubes)	—	1.5R-15Y



Crystallization Unit at Armour's McCook Plant

Distilled Red Oil (Low Titer)

	<u>Min.</u>	<u>Max.</u>
Titer		5°C
Iodine No. (Wijs)	90	95
Acid Value	193	200
Saponification Value	193	200
Unsaponifiable		3%
Color (Lovibond 1 1/4" tubes)		4.0R-10Y

Armour's Oleic Acids are available in 55-gallon drums and aluminum tank cars. Write today for samples and prices.

Cationic Emulsifiers for Insecticides

Many industrial emulsion applications utilize the special properties of cationic emulsions. Because these emulsions are made with cationic active emulsifiers, their oil phases can be exhausted on many types of surfaces. In applying oily materials to surfaces by means of emulsions, greater and more uniform pickup and better adherence of the oil is obtained when the emulsion is cationic.

Arquard 2C (oil-soluble quaternary ammonium compound) is an excellent emulsifier and strongly cationic. However, to insure maximum hard water stability the presence of an Ethofat (non-ionic) is also used in the concentrate.

Demand for these chemicals has been particularly heavy and we regret that we are not always able to meet this demand. However, we expect this situation will

improve soon. In the meantime, your experimental work with these chemicals will permit their earlier use in your products.

The following are suggested formulas for effective cationic insecticide emulsions:

Formula No. 1

65%	Toxaphene
25%	Xylol or Kerosene
5%	Arquard 2C
5%	Ethofat 142/20

Formula No. 2

45%	Chlordane
50%	Kerosene
2.5%	Arquard 2C
2.5%	Ethofat 142/20

Write for further information or samples.

Use of Fatty Acids in Insecticides, Fungicides and Disinfectants

Fatty acids are widely used in preparing spray emulsions for insecticides, fungicides and disinfectants. A soluble oil base is prepared in which the active ingredients of the finished spray are dispersed. Before application, this base is diluted with water.

The emulsifying action in these oil solutions is brought about by the presence of soaps, sulfonated oils, etc. Soda, potash, or triethanolamine are the preferred saponification agents for making these soaps. Generally these soaps are formed "in situ" by the saponification of vegetable fatty acids, fish oil fatty acids, oleic acids, etc., with the desired alkali or alkaline-like material.

Whenever practical the use of emulsions for insecticides, disinfectants, etc., is the most economical method to employ, since any desired dilution with water may be obtained. It is also possible to control the emulsion stability so that either quick breaking or stable emulsions result, thus controlling the release of the active ingredient after application. For these emulsions the Armour Chemical Division recommends Red Oils and Oleic Acids.

FREE INFORMATIVE BOOKLET—Write for the concise detailed booklet, "The Selection and Use of Fatty Acids" which indicates how various products can be improved through the use of fatty acids and their derivatives.

Applications discussed include: protective coatings, water-soluble soaps, cosmetics and toiletries, textiles, waxes and polishes, lubricants, synthetic detergents, synthetic resins, and rubber.

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